THE BOSTON
Medical and Surgical
JOURNAL

VOLUME 194 APRIL 8, 1926 NUMBER 14

ORIGINAL ARTICLES

THE ORIGIN AND SPREAD OF THE SACRO-ILIAC IDEA AND ITS MENACE*

BY CHARLES F. PAINTER, M.D., F.A.C.S.

It would be a very instructive experience had some one the time and the inclination to review the history of the progress of medical thought and speculation in regard to many subjects over which men have wrangled and fought. I fancy we should be surprised at the vagaries in which even the master minds of medicine have indulged. It might indeed be humiliating to discover how illogical and irrational had been the groping after truth which has characterized the discussion of many topics about which a fair degree of unanimity of thought and belief have now been achieved. It is of course true that perversion of normal physiological processes must furnish a field of very great difficulty. The human body is not a retort and the reactions that take place within it cannot certainly be predicted from anything we know or might expect from our understanding of chemistry or physics. The medical mind has not been too well schooled in scientific methods. Many men who are successful in their practice cannot see very much beyond the purely empirical limitations of their knowledge. They are often satisfied to reason from premises which they do not scrutinize any too closely and they are content to base their conclusions upon hypotheses which are surprisingly far fetched. Accurate observation has been the outstanding scientific attainment of those of our profession who have achieved distinction in the clinical field. It was not until Vesalius and Harvey made their distinctive contributions to medical knowledge that the superstition which had enveloped the entire medical profession of the middle ages began to be cast off. Their studies were anatomical and therefore were largely dependent upon close observation. It took a long time to record the details of structural anatomy and until the microscope opened the field of minute anatomical investigation there was much that could not be appreciated at its true worth in the structural field. Comparative mammalian anatomy had to attain some standing before human anatomy could be well understood. In fact that part of the study of the human body is by no means at an end. It was a long time before anyone gave the juncture of the sacra with the ilia any serious consideration. Anatomists found here a peculiar situation and one which seems chiefly to have exercised their ingenuity in concocting a technical nomenclature for it and its type—a nomenclature which should convey the idea that it was different from anything else in the way of a joint. In the anterior portion of the joint according to Sabotta[1], using anatomical parlance, there is an amphiarthrosis and posteriorly a syndesmosis. If you read this author, and Piersol[2], Toldt[3], Testut[4], Quain[5] and Gray[6] you will find practical unanimity of opinion as to what resemblance this articulation bears to a true joint. It is as near a true joint as it need be for the purposes it has to fulfill. In other words Nature has followed her plan of adaptation to function and has put a shock absorber in the rear end where it obviously belongs. I will not trouble you with more than a citation of these anatomical authorities. In the dissecting room and at the operating table the doubting Thomases, if not convinced by the anatomists' reports, could, I think, secure conclusive proof of the reality of the sacro-iliac joint. Clinicians have also contributed to our knowledge of this reality. The obstetricians early appreciated the value of the little it had to offer in the way of mobility, which might advantage a foetus on its way into this world. Perhaps the most valuable contribution from the obstetrician was presented in 1889 by Walcher[7]. Hirst and Newell in their text books on obstetrics call attention to the role played by this articulation in parturition. A valuable contribution by Klein[8], based on extensive anatomical research upon fresh cadavers and upon the living subject, confirms Walcher's observations with reference to the method of alteration of pelvic diameters and the degree of mobility developed in the ilio-sacral articulations. He called attention to the frequency with which in elderly subjects there was evidence of proliferative (possibly arthritic) changes about these joints and also that in some cases motion seemed to be increased as age advanced, attributed by the author to the thinning of cartilage lining the joint. Albee[9] quoting Morris, the anatomist, who denied there was any appreciable motion in the sacro iliac synchondrosis, and Williams, an obstetrician, who in 1903 claimed that "the articulation between the sacrum and ilium is described as a synchondrosis, but is really a joint, on account of the presence, always, of more or less synovial membrane" and Kuttner who asserts that it is a joint "with motion" and Walcher whose position has already been cited, determined to settle the question for himself. He dissected fifty cadavers and showed that in all of them there was a perfect joint, all the usual joint structures being demonstrable and in every case but one, where there was ankylosis, motion was present. He brings the testimony of Lushka and Cunningham, both anatomists to the effect that the anatomical evidence points to the existence of a true joint. Goldthwait and Osgood[10] report the results of clinical observation on more than one hundred patients, supplemented by anatomical studies on twenty subjects in the dissecting room and a certain amount of post mortem material. They were convinced that motion exists in these articuations. Brook[11] states that the old description of the sacro-iliac joint as an amphiarthrosis was descriptive of a pathological change. The normal condition places the joint among the diarthrodial articulations. In the male, motion is slight up to the fiftieth year. After that the joints tend to ankylose. Of one hundred and five male joints examined thirty-seven per cent were completely ankylosed; none under fifty years of age. An equal number of female joints were studied, none of which were ankylosed.

---

*Read before the Boston Orthopedic Club, March 15, 1926.

Allen[12] after a comparative study of the sacro-iliac joints in living and fossil animals, who use it in the same way that the human being does, points out that three segments enter into the formation of their pelves and that their sacro-iliac joints function as do ours. He contends that X-ray studies tell us nothing about the joint and that conventional methods of diagnosis are not dependable. He compares the motion in these joints to that between the external and middle cuneiforms.

Pilatte and Vignes[13] have studied the embryological development of these joints and state that in the 10th week the cavity is first in evidence. In the infant the articular surfaces are often joined by fibro-cartilaginous "trusses" indicating delay in the development of the joint cavity. The shock-deadening function of the joint is due to the slight degree of motion it possesses, the so called mutation and anti-mutation. They assert that detection of motion and X-ray examinations are very difficult because of location and irregularities of shape.

Pope and Curran[14] give a brief review of the make up of the joint, the character of the motion in it, which is stated to be slight in an antero-posterior direction, and describe the stabilizing ligaments and muscles concerned in keeping it in a functioning condition. They feel that the pain which even a little motion may cause is due to the fact that the lower lumbar and upper sacral nerves lie over the anterior aspects of these joints.

Smith-Peterson[15] has studied the distribution of the sensory disturbances occurring in sacroiliac lesions in a considerable number of cases and employs the data thus obtained to assist in differentiating sacro-iliac from lumbo-sacral lesions.

Nuttal[16] claims that this joint can no longer be regarded as a synchondrosis but as an arthrodial or gliding joint. No muscles act directly upon it.

Cyriax[17] concludes from his studies on the question of mobility in this articulation that under normal conditions there is no gliding motion. In early life these articulations are not very stable and sudden movements may result in luxation. The presence of gliding or rotation movements point to pathological states.

Baer[18] says the old term of synchondrosis is a misnomer, for it is a true joint. He describes the forward and backward movement of the sacrum.

Barre[19] and Duprè carried out a research as to the cause of sciatic pain in sacro-iliac troubles and found an involvement of two radicals viz: that of the crurae and the obturator. Cofield[20] advances the suggestion that the pain of sacro-iliac lesions is not due to impingements upon it, the so called nerve root pressure, but is due to the nerve being crowded between the semimembranosus and the semitendinosus muscles, they being in protective spasm to guard a sprained or diseased sacro-iliac joint.

A similar conclusion was reached by McBerry[21], except he implicates the pyriformis and the gluteus maximus in the protective spasm. Marshall[22], in a questionaire, secured replies from 80 surgeons, 23 of whom were orthopaedic specialists, to the effect that the sliding motion of the sacro-iliac joints is slight. Goldthwait[23] showed upon a series of anatomical preparations very definite motion in these joints, pointing out how either from injury in either sex or from pregnancy alone this motion might be abnormally increased.

From the above quotations of the writings of clinical observers who have made some special effort to satisfy themselves on the cardinal question, which lies at the root of the matter, as to whether there is such a thing as a sacro-iliac joint, there would appear to be a unanimity of clinical support to the position taken by all the anatomists quoted, with the exception of Morris. We may therefore assume that we are justified in claiming that a joint exists between the sacrum and the ilium for nearly all are agreed that there is motion.

Now as to the lesions. The fact that the amount of mobility possessed by it is admittedly slight and its defense against injury is exceptional, for various reasons, is the very ground for the conclusion that when these defenses *are* once broken through the evidences attributable elsewhere to a sprain are conspicuous here viz: pain, spasm and immobility, plus a few especial phenomena peculiar to the anatomical conditions prevailing in this locality. The physical phenomena of any sprain are dependent upon the motion belonging to that joint having been carried beyond the point established for it by the ligaments and other supports for the articulation. The sacro-iliac joint is no exception to the rule for when, for any reason be it a single individual trauma of considerable violence, when there may be an actual dislocation at the joint with fracture of one or more of the processes of the innominate, or a sudden, unguarded motion is made, permitting undue stress to be inflicted upon the natural supports of the joint or, because habitual, slight traumata or postural strains, occupational or otherwise, be visited upon the joint over a considerable period of time, the result is the same viz: a guarding of the joint by muscle spasm, pain and often deformity. Furthermore because of the localization of the lesion and its proximity to nerves and muscles in close association with the affected joint there are certain pathognomonic signs not possessed by other articulations when they are the subject of sprain, viz: referred pain from nerve root pressure and restriction of thigh flexion when the leg is in extension. This class of lesions constitutes by far the larger proportion of those affecting these articulations. There is no reason to suppose that the specific structural changes belonging to the class of lesions known as sprains are any different here than they may be in the ankle joint for example, viz: rupture of ligamentous fibers, injection of synovia and increase in joint fluid. It may be that because the nature of this injury is not as well comprehended by the laity and therefore the sort of treatment appropriate for a sprain is not, as a rule, as promptly accorded as in the sprains of the more commonly injured joints, there results a physical injury which becomes greatly exaggerated. Certainly it is rarely the case that a patient upon whom this diagnosis is made has this joint as thoroughly treated in accord with the accepted principles for the management of sprains as would be the case if such a patient had sprained an ankle or wrist. We certainly do not believe that either of the last named joints when sprained should be immediately subjected to violent manipulation. There is no evidence obtainable, by X-ray examination or otherwise, that there is ever any appreciable displacement of the sacrum on the ilia. The fresh cases should therefore be treated after the manner of any sprain, unless special indications to the contrary are in evidence, and be kept for a few days as quiet as we would keep an ankle in the same situation. It should be so constantly our practice to insist upon this that the public may soon realize that this is what should be done. When this time shall have arrived there will be many less sub-acute and chronic, or even relapsing sacro-iliac strains, requiring manipulative or prolonged mechanical treatment. As for open operative treatment for such lesions, except perhaps where anomalous, anatomical situations obtain, they never will be required. After the brief period of fixation or complete rest in bed has been passed through, then protection by strapping, belts or brace, coupled with appropriate physiotherapy should be provided. It is failure to have this initial stage of the treatment, appropriate and necessary to the management of any sprain, carried out that furnishes us with the class of cases we are called upon to treat. Because of the lack of proper initial treatment the joints become injected, adhesions form in a space so restricted that the slight mobility present is immediately expressed in terms of pain and the prime essential in the management of such joints is to free up these adhesions and start back at the beginning.

The object of manipulation is not at all the reduction of a dislocation or even subluxation but solely to break up adhesions and overcome periarticular spasm of muscle and accommodative contracture of capsule. Baer[24] discusses the value of manipulative treatment of sacro-iliac sprains in a well considered article in the *Johns Hopkins Bulletin.*

Having considered the traumatic lesions of the sacro-iliac joints it is now in order to take up their pathological lesions. Of these there are practically only two, tuberculosis and juxta-articular osteomyelitis, for the toxic and hypertrophic manifestations of arthritis seldom are noted in these articulations. One would hardly expect the latter to make much of a disturbance here for the joint has so little motion and the lesions are not located so that in a joint of this character they could be so placed as to produce symptoms which would attract attention. In the rare cases where toxic arthritis includes these joints in its attack the involvement has been so general that the sacro-iliac process is scarcely noticed by the patient. In regard to tuberculosis we have found references to experiences by Codavilla[25] who has observed five cases, three of which were treated by rest and two by operation. One of the latter recovered but in the other it is not stated what the result was. He concludes that in the severe cases surgical intervention is necessary because of danger of amyloid or generalization of the tuberculous infection. He describes the procedures of Bardenhauer and Schede. Thorndike[26] reports two cases in children, who he states are generally immune from tuberculosis in this locality. Bone necrosis and sequestrum formation in the ilium and sacrum characterized these cases, both of which were operated upon and abscesses drained.

Zesas[27] has made, in 1906, an exhaustive study of the literature and collected 94 operative cases of tuberculosis from 1814, when Boyer described the first case to be found on record, down to the date of this article (1906). Of these cases 36 were cured, 29 died and 18 were improved. The result in the remainder was not specified. He describes the methods of Bardenhauer, Schede and Delbet quoting Bardenhauer's mortality of 30% in 20 cases. He himself had secured good results from iodoform-glycerine injection. Nuttall[28] reports 9 cases of tuberculosis originating more commonly in the sacrum but always in bone. From the bone extension was to the joint and across it to the opposite side. Intra-pelvic abscess is the more common. In 8 cases outside of one of the author's, only one had been cured by resection. He quotes Picque as having had 5 cures in 7 cases operated. His own case was operated by Picque's method, which he advocates as against the grafting methods now in use. This case had remained well for two years at the time he was last seen. Smith Petersen[29] cites the experience at the Massachusetts General Hospital's Orthopaedic Clinic where 8 cases had been operated in 3 years by the dowelling operation of the author.

Spitzy and Reiner[30], Thienhaus[31], Ryerson[32] and Eads[33] contributed other case reports on tuberculous disease of the sacro-iliac articulation as do many others referred to in the bibliography. The prognosis used to be regarded as very bad and has not much changed even since the introduction of more modern or more radical procedures, at least in the hands of many who report.

Rollier is quoted by Roth[34] as having cited, in his "Heliotherapy", 83 cases of sacro-iliac tuberculosis, the results in the treatment of which were carefully given. Judging from the favorable effects which thorough going sun treatment, when carried out over long periods of time under suitable conditions have produced in other forms of osseous disease and osseous tuberculous lesions in other localities, it would seem that more attention should be given to this phase of the management of these lesions then is commonly accorded. That too much reliance must not be placed upon the radiogram either in determining the character of an apparent lesion of the sacro-iliac joint or even whether a lesion exists at all, is repeatedly emphasized in the literature. The usual constitutional stigmata of tuberculosis must be looked for as carefully here as elsewhere and in adult patients, without at first any suspicious constitutional signs, the persistence of symptoms beyond the average time that adequate protective treatment yields positive results, should lead to a careful review of the case to exclude a possible tuberculous involvement. Of the non-tuberculous lesions of this joint osteomyelitis is probably the next in importance. The localization of an osteomyelitic process in a joint is possible here as elsewhere only because of a primary juxta-articular lesion which involves the joint by extension either from the iliac or sacral side. Plagemen[35] reports such a case and discusses the similarity of this lesion in the sacro-iliac joint to similar lesions in the neighborhood of other articulations where they may remain latent for some time before involving the articulation. The writer[36] has operated four patients in whom this condition existed one of which was certainly tuberculous, a second possibly so and the other two unmistakably osteomyelitic, the staphylococcus and a streptococcus being the responsible organisms. A few scattering reports of acute invasions of the sacro-iliac joints following focal infections are reported but for the most part one may regard them as contributing little to our knowledge of the subject. They were isolated instances and in none of them was there any evidence except the coincidence of arthritis in the region of the sacro-iliac and a remotely located infection. Etienne[37] reports a case in which a sarcoma of the sacro-iliac region gave rise to symptoms that were not reflective of the true pathology until exploration revealed the grave nature of the lesion.

Reference has been made to observations tending to prove that after fifty, in men at least, there is a tendency for these joints to become ankylosed without any clear indication that there are traumatic or pathological influences at work to bring this about. In the appended literature there are two or three clinical references that would suggest such an explanation for the cases reported. During the past four or five years the writer has observed a few patients in whom this has actually gone on under his observation, first on one side and then on the other. Not all of these patients have been above the fifty year period neither have they been confined to the male sex. In none of them was there any suggested pathology. In so far as X-ray pathology may be accepted as indicating what has been transpiring they showed roughening along the iliac crests and at the attachment of the ilio-sacral ligaments, some spiculation or spur formation at the inferior borders of the sacro-iliac joints and at times an increased density along the margin of the joints but never any destructive lesion or proliferative change, other than as above noted. Progressively in X-ray pictures the line of demarkation between sacra and ilia became obliterated and coincident with this obliteration the characteristic signs and symptoms disappeared. I am convinced that this represents came Nature's answer to habitual instability of this joint and that we should reckon with this in planning treatment in individual cases of a chronic type which have been subject to frequent remissions of symptoms. Dried specimens in the museums show the complete osseous union of this joint. The sacro-iliac and lumbo-sacral articulations have, in recent years, served the purpose that the pelvic viscera did for so long a time, so far as the female sex was concerned. Back aches, leg aches and sciatica, in women, were even in my memory, credited to retro- or ante-versions of the uterus and the gynaecologist was appealed to for aid. Even in medicolegal circles a considerable amount of the traumatism, giving rise to tort proceedings, centers about the sacro-iliac joints and so with the hearings before Industrial Accident Boards. The surgeon, the gynaecologist, the orthopaedist and neurologist can scarcely escape being brought face to face with these problems in some one of the various channels down which they come.

A good deal has been written from the neurological standpoint in respect to the causation of sciatic pain which is one of the conspicuous symptoms of sacro-iliac lesions. Rosenheck[38] and Finklestein have reviewed the history of the treatment of sciatica, classifying the types and pointing out how large a group belong to the orthopaedic variety. They conclude that involvement of the roots of the sciatic, as they lie over the sacro-iliac joint, is due to oedema and congestion, compressing the nerve fibers and in some cases causing a degenerative reaction in certain of them. Where the course of sciatic pain is not dealt with and only the local condition treated, failure is certain to follow. Hence the epinural injections, so commonly employed abroad and by some in this country, are prone to failure. The article is well worth careful perusal. Chappell[39] emphasizes the necessity for a careful study of the low lumbar and pelvic regions whenever sciatica is a prominent symptom and reviews carefully the anatomic relations of the sciatica from its source, through the field where anomalies in skeletal structure and pathologic or traumatic influences may be operative.

Nutter[40] gives an exhaustive review of the history of the causes of sciatica as they appear in medical literature since 1862, when a book on the subject appeared in London by Fuller. He finds a majority of the sciaticas are traceable to lesions of the lumbar spine, the hips and the sacro-iliac joints. He refers to Roger's[41] compilation of fifty cases of sciatica in which forty were associated with the lumbo-sacral or sacro iliac joints. While urging a search for the cause of sciatic pain he advocates giving relief for the pain, which may be done with a negligible risk of injuring the nerve and a certainty of several hours relief from suffering, by injecting sterile water into the epinural space of the sacral canal.

A contribution from an internist, McCrae[42], who is discussing sciatica in an article in the Medical Clinics of North America coincides with the general views expressed by the neurologists and orthopaedic surgeons already quoted. In his experience sciatic neuritis is extremely rare. He mentions as among rarer causes, gout, diabetes, syphilis, psoas abscess, lesions of the cauda equina, malignant disease or tuberculosis of bones of the pelvis or lower spine, hip disease, varicose veins in the sheath of the sciatic nerve, and diseases of the pelvic viscera in women. Cowan[43] discusses the question of what sciatica is pathologically, whether a neuritis or a neuralgia. From the great frequency with which pressure over the sacro-iliac joint sends pain through the sciatic distribution he concludes that whatever is present at the joint to put it in an irritable condition to pressure, is communicable to the nerve and hence is a neuralgia and not a neuritis, for there is rarely any tenderness over the sciatic nerve at its most exposed points. He quotes Oppenheim, Gowers and others. Petren and Otterstram[44] have made studies upon the etiology of sciatica with a view to proving or disproving Djerine's theory that they are radicular in origin and therefore that syphilis might play an important role in the causation. In forty-seven out of forty-nine sciaticas tested by the Wassermann reaction the findings were negative. In forty-five of the eighty cases of sciatica in whom they made radiographs of the spine there were no abnormalities. In twenty-five there were slight deformities and in ten definite spondylitis deformans was diagnosed. One of the writers had felt that in some types of sciatica the pain was not in the nerve but in the gluteal muscles.

Leszuansky[45] discusses the causes of sciatica and from his own experience in about 300 cases feels that 75% of them were due to lumbo-sacral or sacro-iliac lesions. The preponderance of pathological evidence points to there being a peri-neuritis in true sciatica but no definite lesion in the nerve itself.

We have seen then that from an anatomical standpoint there is pretty general agreement as to the bona fide character of the sacro-iliac joint. This has included an agreement as to the existence of motion. These ideas have been concurred in by obstetricians, orthopaedic surgeons, gynaecologists and internists.

When it comes to the question of the significance of sciatica as a very constant symptom of sacro-iliac strain or disease there is not quite so unanimous an agreement as to how this is brought about. There is however an overwhelming body of evidence to the effect that we may regard sciatica as a cardinal symptom of sacro-iliac lesions and that it is a peri-neuritis brought about by the proximity of the radicals making up the main trunk of the sciatic to whatever lesion is affecting the joint. In this there is agreement on the part of the neurologists.

It was not until the late '90s and the early 1900's that there began to be much, if any, reference to sacro-iliac lesions in the literature but today the volume of this literature looms large and contributors to it are derived from many special fields as well as from general medicine and surgery. The time seems to have arrived when one does not feel any necessity to apologize for entertaining the belief that there are such joints and that they have recognizable disturbances, the therapy of which may be prescribed wtih as much confidence of success as is true of most any lesions.

Now a word as to what I have designated in the title as the "menace" of this idea. This of course relates now, not to mistaken or ill considered diagnosis but to treatment. The campaign of education in respect to recognition of the lesions has been fought but we are still a bit dis-oriented as to treatment. In the traumatic sprain or strain cases I am convinced the management of the acute ones should be identical with that of similar lesions in other joints. Subacute and chronic cases should be handled by a more frequent resort to manipulative measures, following these up by physiotherapy. The same amount of time in spica-fixation in the non-manipulative cases as must needs be spent in operative and post operative measures would result in restoring even the badly listed patients to normal. It is my belief that open operative interference in this group of cases is practically never indicated and should certainly never be undertaken until prolonged spica-fixation has been tried. The only exception to this rule would be where it was apparent that the patient could not or would not submit to this.

In the pathological cases viz: osteomyelitis and tuberculosis, I believe the former should be drained and dealt with on the general surgical principles applicable to osteomyelitic foci anywhere and for this purpose where drainage is likely to be required for some time the incision selected should be the one giving most direct access to the demonstrable focus where tuberculosis is suspected, and unsupported X-ray evidence should never be accepted in proof of its existence. I should prefer to take chances on maintaining a closed focus to exposing such a lesion to possible infection, when it had not broken down, or to a far greater likelihood of it if it had already done so than would be the case if treated conservatively. Heliotherapy and recumbency, in my opinion, are more in accord with what the experience of the past has shown us in respect to the repair of tuberculous osseous lesions and their isolation from surrounding tissue. We passed through the erasion stage of the treatment of tuberculosis of large joints not so very long ago—too short a time perhaps for its perspective to be of much value to any but those who passed through the period. Certainly no one may properly claim that the open operative treatment of a tuberculous lesion in the sacro-iliac joint, by any method of approach or with any accompanying procedure, could result in anything but an erasion, and a pretty imperfect one at that. There is no doubt that fixation of a joint which is the site of a tuberculosis process is the essential feature in its treatment but operative methods of fixation have not proven any better than any other methods where it was not possible at the same time to extirpate the disease. Even excisions of the knee where the disease has advanced unexpectedly far into the femoral or tibial condyles and this fact has escaped detection at operation, are very prone to give trouble a long time after the excision. One certainly has far less chance of removing even the major part of a tuberculous focus in a joint so located as the sacro-iliac.

I am well aware of the fact that no progress could be made in the art of medicine unless there was a radical wing to the profession as well as a conservative one and that of the two it would possibly be more unfortunate if conservatism rather than radicalism gained the ascendancy. What will make for the greatest good and the steadiest progress will be for those with radical tendencies to tinge their radicalism with a knowledge of the experience of the past. It is unfortunate that each generation feels that it must gain its own experience and repeat the mistakes of their predecessors. It is right here that the "menace of the sacro-iliac idea" lies. We are in danger of making too wide and ill advised an application of a surgical principle having undoubted merit just as was done when Lane with his enthusiasm brought out his open operative treatment of fractures. There was a considerable number of the surgical profession who thought they saw in this a short cut to the treatment of *most* fracures instead of a method applicable to a *very few*. The same thing has proven true of the wholesale application of the principle of bone grafting in spinal lesions and elsewhere. To focalize fixation upon the exact locality of a tuberculous lesion in a vertebra, by Albee's method, possessed a very strong appeal to all having to deal with patients with Pott's disease. We are beginning to realize however that even this method has its limitations and that the utilization of the bone grafting principle must be exercised with a considerable degree of conservatively inclined judgment. The evidence, which is accumulating and which was, as a matter of fact, among the earliest pieces of evidence we had in support of the idea that there was a sacro-iliac joint, should tend to give us pause in advocating operative measures, other than manipulative, in the treatment of traumatic sacro-iliac lesions. I refer to the tendency to spontaneous ankylosis in patients, who, for some reason, have not such natural defenses in this region as will prevent the recurrence of strains and their attendant symptoms.

If we give due weight to this evidence, providing its truth be demonstrated by more extended observation, we shall then be justified in being even more conservative than we now are.

REFERENCES

1. Vol. 60, pp. 128, (1906).
2. 7th Ed. pp. 338.
3. 1903 Ed.
4. 11th Ed. 253.
5. 20th Ed. 306.
6. 6th Ed. 574.
7. Centr. fur Gynac. No. 51, (1889) Vol. XIII p. 892.
8. Zeitsch fur. Geburtsh. er. Gynac. Stutt., 1891, XXI. 74-118.
9. J. A. M. A. 1909, LIII 1273.
10. Boston Med. & Surg. Jour. 1905, CLII, 593.
11. Jour. of Anatomy, London, 1923-24, LVIII 299-305.
12. Indianapolis Med. J., 1923, XXVII, 151.
13. Pilatte & Vigness—Prog. Med., 34, 479; Nov. 29/19.
14. Am. Jour. Elect. Therapy & Radiology, N. Y., 1919 XXXVII, 228, 259.
15. Jour. Bone & Joint Surg. Vol. VI. No. 4, pp. 819-826, Oct. 1924.
16. Lancet, London, I 978-839-843. Apr. 28/23.
17. Edinb. Med. Jour. 19: 370: Dec. 1917.
18. Bull. Johns Hopkins Hosp. 28-159; May 1917.
19. Rev. de Med. 37: /16 Jan. & Feb. 1920.
20. Am. Jour. Orth. Surg. 16, 418, Nov. 1918.
21. Albany Med. Assn. 67-348, Mar. /18.
22. Boston Med. & Surg. Journ. 785-79; July 21/24.
23. Boston Med. & Surg. Journ. 152-280, 1905.
24. Bull. Johns Hopkins Hosp. 28-159, May '17.
25. Arch. ed. attid. Soc. Ital. Dichir. 1901, Roma. XV 467-476.
26. Amer. J. Orth. Surg. Phil. 1905. II-349-352.
27. Zeitschrift f. Orth. Chir. 1906. XV.-330-352.
28. Lancet, London 1923 I-978.
29. S. Clinics No. Amer. 1-703., June 21/23.
30. Zeitsch, fur Orth. Chir. 1906 XVII 420-430.
31. Am. Med. Phil. 1901, II 864-866.
32. J. Am. Orth. Assn. Phil. 1905-06. III-250-252.
33. Med. Standard Chicago 1904—XXVII—522.
34. Proc. Roy. Soc. Med., London, 1913-14 VII—Surg. Sec. 54.
35. Deutsch. Med. Woch. Leipsic & Berlin, 34, 966-968.
36. Painter, Jour. Am. Med. Asso., Jan. 30/26 Vol. 86 No. 5, p. 341.
37. Rev. Neurologie Paris, 1924, XXI. pt. 2: 636-638.
38. Jour. A. M. A. 841 1B-939-944, Mar. 28/25.
39. California & Western Med. 22, 91, March '24.
40. Canadian Med. Asso. Jour. Vol. X 1920, p. 497.
41. Jour. A. M. A. 1917, LXVIII. 425.
42. Med. Clinics of No. Amer. 1918-II, 761.
43. Brit. Med. Journ. 1923, 1-372-373.
44. Acta. Med. Scandinav. 1921, 55-614-630.
45. New York State Med. Jour. 1921, 21-337-340.

X-RAYS OF THE CHEST: THEIR USE IN TUBERCULOSIS SUSPECTS*

BY ROBERT T. MONROE, M.D., AND EDWARD S. EMERY, JR., M.D.

One frequently sees patients complaining of vague symptoms of malaise, ease of fatigue, etc., in which the possibility of an underlying tuberculosis presents itself. In such cases an X-ray of the chest is often most helpful in showing quickly and easily the presence or absence of a pulmonary process. However, unless one is equipped to take routine chest plates on all first examinations it is not always easy to decide on which cases to have them taken. The frequently negative X-ray reports tend to deter the physician from subjecting a patient to an unnecessary expense and worry. The following is the report of a study undertaken to determine how far one is justified in using the X-ray in this type of patient and in what way one may best choose his cases for X-ray.

METHOD OF STUDY

118 consecutive cases in the O.D.D. of the Peter Bent Brigham Hospital were examined, of which 107 presented themselves to the X-ray department. These cases were only those coming to the hospital for the first time or former cases who had not appeared for a considerable interval and were to all intents and purposes new cases. None of them had been seen by either of us before. The histories were taken by one of us, but examinations were made by each independently. A common diagnosis was agreed upon and the patient was then sent to the X-ray department.

It is felt that the conditions under which the work was done closely simulated those under which a physician in general practice would be working. Although the patients were of the dispensary class they were for the most part intelligent and coöperative. Approximately thirty minutes were devoted to taking the history and doing the first physical examination. This seemed to be a reasonable amount of time for diagnosis, or at least representative of the usual conditions. In examining the patients we were not hurried, and although the department is located upon a noisy street, it is no different in this regard from the conditions which one often encounters. In short, although they were not ideal they were quite satisfactory in being representative of the situation which we were trying to investigate.

Upon receipt of the X-ray report the cases were divided into four groups,—

Group I—Cases in which a positive clinical diagnosis was made and the X-ray was positive.
II—Cases in which a positive clinical diagnosis was made and the X-ray was negative.
III—Cases in which a negative clinical diagnosis was made and the X-ray was positive.
IV—Cases in which a negative clinical diagnosis was made and the X-ray was negative.

We then compared these groups in regard to symptoms and signs. In addition we studied 500 cases observed on the wards of the hospital upon which a diagnosis of pulmonary tuberculosis had been made, and compared the physical signs noted by the various men under ideal conditions with the X-ray findings.

---

*From the Medical Clinic of the Peter Bent Brigham Hospital.

TABLE I.

Group	I	II	III	IV
Cough	2	8	3	15
Pleurisy	0	3	1	0
Expectoration	0	6	2	4
Night Sweats	1	0	1	3
Weight Loss	2	4	2	5
Oppression	1	2	0	4
Malaise	3	3	3	8
Fatigue	0	5	0	3
Nervousness	0	2	1	6
Insomnia	0	2	0	3
Headaches	1	1	1	6
Indigestion	1	3	4	28
Nausea and Vomiting	1	4	0	2
Chilliness	0	1	1	1
Dyspnoea	1	0	1	8
Pain in chest	0	2	2	6
Rheumatism	1	1	2	6

In referring to table one, one sees the number of symptoms used in studying these cases, and the number of times each symptom occurred in the four groups. Under the column headed malaise have been grouped the figures originally in two columns, "weakness" and "malaise", as there seemed to be such a small difference between them. Most of the symptoms will be readily understood. By "rheumatism" we referred to any discomfort experienced by the patient in either the muscles or the joints. By "indigestion" was meant any complaint attributable to the gastro-intestinal tract other than nausea and vomiting. By "pleurisy" was meant any discomfort which in the history or the physical examination suggested irritation of the pleura. This is differentiated from "pain in the chest", by which is meant any discomfort which seemed due to either muscular or arthritic pains around the thorax. The column devoted to "dyspnoea" contains any symptom concerning difficulty in breathing which might be classified as something more than "oppression".

TABLE II.

Group	I	II	III	IV
No. Cases	4.0	15.0	7.0	81.
% No.	3.7	14.0	6.5	75.7
No. primary symptoms	7.0	19.0	9.0	27.0
Primary symptoms per case	1.6	1.4	1.28	0.33
No. secondary symptoms	4.0	12.0	4.0	21.0
Secondary symptoms per case	1.0	0.8	0.57	0.26
Tertiary symptoms	5.0	14.0	11.0	60.
Tertiary symptoms per case	1.25	0.93	1.55	0.74

In order to render this classification of symptoms more easily subject to analysis we have grouped under the term "primary symptoms" pleurisy, cough, expectoration, night sweats and weight loss. Under the term "secondary symptoms" comes a group which we conidered definitely suggestive of tuberculosis but not so clearly as the primary ones, namely oppression in the chest, malaise, fatigue and nervousness. The rest of the symptoms were not definitely suggestive of tuberculosis,—rheumatism, insomnia, headache, indigestion, nausea and vomiting, chilliness, dyspnoea, and pain in the chest. These were classified as tertiary symptoms.

From table II it is seen that four cases were diagnosed pulmonary tuberculosis clinically and confirmed by X-ray; fifteen cases were diagnosed pulmonary tuberculosis clinically and not confirmed by X-ray; and seven cases in which it was not suspected the X-ray showed it to be present. In other words, out of 107 cases our diagnosis of tuberculosis agreed with the X-ray findings in 3.7% and our diagnosis of no tuberculosis agreed in 75.7%. 20.5% of cases did not agree from this standpoint, of which 14% failed to show it after we had made a positive clinical diagnosis, and 6.5% showed it after we had failed to diagnose it. Or, putting it in another way, 79.4% agreed with the X-ray as to the possibility of tuberculosis being present, and 20.5% did not agree.

In the other columns of the table are placed the number of primary, secondary and tertiary symptoms occurring in the four groups and next to these columns are placed the symptoms expressed in the form of a common denominator, or on the basis of the number of times these symptoms occurred per case in each group. A study of these figures reveals the fact that the primary and secondary symptoms ran about the same in groups I, II and III and showed a definite decrease in group IV.

In reviewing our physical findings, it seemed pretty evident that the physical signs in group I were somewhat more definite than in group II, although as a whole there was surprisingly small difference between them. In looking over the physical examinations in the group III cases there was nothing that we had recorded which would have justified us in making a diagnosis of tuberculosis. The physical findings in group II were definitely such as to suggest the possibility of pulmonary pathology; in group III they were not. In looking back, therefore, and analyzing our symptoms and physical signs, it would appear that the cases in groups II and III were diagnosed as they were because the physical signs in group II seemed to corroborate the suggestion of tuberculosis raised by the symptoms, whereas they failed to do so with symptoms which were almost as pronounced in group III.

Various attempts were made to tabulate the physical findings in order to evaluate their significance in making the diagnoses, but without success, and they have not been included here.

The number of cases was too small and the shades of difference in each finding were too numerous. It may also be added that a study of the single temperature and pulse record of these patients taken only at the time of their first entry failed to reveal any information of value in the four groups.

Study of the X-ray films shows rather decidedly that the pulmonary processes in the group I cases were much more advanced and more definitely active than those in group III. But it fails to explain why the physical signs in group II should have been more suggestive of tuberculosis than those in group III. Of course, one is influenced by the degree or the quality or perhaps the value that one places on the patient's story or physical examination at the time, and we realize that this must be taken into account in considering why we made a certain choice in the individual case. This factor is one which cannot be expressed adequately in tables. On the other hand, it seems fair to say that the four cases of tuberculosis which were diagnosed correctly represented patients whose symptoms and physical signs were quite marked and in whom a rather advanced tuberculosis was present. Of the cases in groups II and III the symptoms were much the same but the physical findings were quite different. In other words, of these 22 cases, or approximately 20% of the series, we did not agree with the X-ray because of the physical examination.

These observations bring up the question of how much our physical examination in this series can be relied upon, compared with the examinations done under different circumstances and by other physicians. How much did the question of noise and other hindrances under which we had to work, and how much did our lack of ability in the examination of the chest play a part in the failure of the physical examination and the X-rays to check?

In order to answer this point, we have studied the records of 500 cases which have been observed on the wards of the Peter Bent Brigham Hospital on whom a positive or tentative diagnosis of pulmonary tuberculosis had been made. Here the examinations of the chest were made under the very best possible conditions. Under the method of study and visits employed in this hospital, it is usual for each patient to have anywhere from 2 to 5 or 6 individuals go over him, frequently beginning with a medical student, who is followed by one or more internes and assistant resident physicians in charge of the ward, and finally by 2 or 3 visiting men. This would seem satisfactorily to answer the second objection as to the ability of the individuals making the examination. The method employed in studying these records was as follows. All cases, on which a discharge diagnosis of pulmonary tuberculosis was made, were taken consecutively as they occurred in the index up to the number of 500. A record was made of the results of the various chest examinations in each, and of the X-ray reports. We then looked up the requisitions that were filed in the X-ray department in order to determine the reasons for requesting a chest X-ray,—whether a diagnosis of tuberculosis had been made or considered, or whether the patient had been sent down ostensibly for some other condition, and an unexpected tuberculosis found. As a result of this study we divided the cases into 3 groups, corresponding with the first 3 groups in our series.

Group I	353, or 70.6%
Group II	83, or 16.6%
*Group III	64, or 12.8%

These figures cannot be compared directly with our own findings, for several reasons. Broadly speaking, the cases represent more advanced disease than one sees in a dispensary. In a certain number chest examinations were doubtless done as a result of close observation of temperature, pulse, etc., which as we have pointed out is not always possible in dispensary work. There can be no group IV comparable to that used in our series. It is to be expected, therefore, that group I should be relatively large. But the number of cases in groups II and III seems to us to support our own findings very satisfactorily, for there were 83 cases (16.6% as compared to our 14.0%) who were suspected of having pulmonary tuberculosis from their physical signs, and there were 64 (12.8% as compared to our 6.5%) who had it definitely by X-ray in whom the lack of physical signs failed to suggest its presence.

A more detailed analysis of these cases revealed a still greater discrepancy between the physical findings and the X-rays in some cases. Thus the X-ray reported cavity formation in 63 cases which showed no evidence by physical signs. This particular finding is, of course, likely to be inaccurate, as the diagnosis of cavity in a film is often difficult and doubtless incorrect in a certain number of cases, particularly during the period of X-ray development during which some of these cases were studied. In 7 cases a clinical diagnosis of cavity was made which the X-ray failed to reveal. In only 11 of cavity did the clinical findings and the X-ray coincide. In 64 physical signs were reported on one side where the X-ray revealed a definite infiltrative process in both. In 10 physical signs were found on one side and the X-rays

*Sputum examinations done on these cases were as follows:—

Group	Cases	Sputum +	 —	 Not Obtained
I	353	138	104	111
II	83	7	43	33
III	64	15	19	30
Total	500	160	166	174

revealed no tuberculosis on that side but on the opposite.

This study of house cases brings out the fact that physical examination of the chest done under good conditions and by experienced men is uncertain enough to make it dangerous to lay too much stress on it alone in any particular case. In other words, whenever we have symptoms suggesting tuberculosis we cannot rule out the possibility of a pulmonary process—even of considerable extent—because of a negative physical examination. If we return to our own series of 107 cases it seems fair to say that in the 21 cases incorrectly diagnosed we were led astray by the physical examination. The symptoms proved by far the more helpful.

DISCUSSION

These results seem to indicate clearly what use should be made of the X-ray in the diagnosis of pulmonary tuberculosis. Chest plates should be taken on all patients whose symptoms suggest tuberculosis, regardless of their physical findings. If one allows himself to be swayed by the latter in cases that are not definite he will frequently err. This is well illustrated by two cases in our series which happened to be seen on the same morning.

E. M., O.D.D. No. 107,334, aged 21, a single white American female, entered on September 16, 1925, for a routine examination before returning to school. She had been working very hard in college for the last three years, being very prominent in college activities besides carrying a scholarship. In the summer time she usually worked as a leader in a girls' camp. For the last two years she had noticed that she tired easily and had occasional pains in her chest. She had very frequent head colds and coughs and her appetite had become very poor, but she had lost no weight. Her history was otherwise negative, save that her father died of tuberculosis years ago. Physical examination revealed a well developed, slightly undernourished adult white female. The tonsils were enlarged and very irregular. The lungs were entirely negative to one of us; the other found nothing save a questionable change in breath sounds at the right apex. The rest of the examination was also negative. Temperature 98.4. Pulse 92. Stereoscopic films of the chest reported by Dr. Vogt showed "adhesions of both diaphragms. The lungs showed marked infiltration at both apices, more on the right, which is quite dense and apparently of some standing. Impression: —Pulmonary tuberculosis."

Here was a girl who entered for physical examination to be sure that she was fit to return to college. She had quite definite symptoms of pulmonary tuberculosis and a suggestive past history, but physical examination showed only enlarged tonsils. She was considered to be one who had been driving herself to work beyond her strength both in her school work and her extra-mural activities. It seemed quite fair to suppose that there was nothing more serious present and that she would entirely recover upon adequate rest, regulation of activity and attention to her naso-pharyngeal condition. We would have missed the diagnosis—and probably worked considerable harm to the patient—had we not taken a routine chest X-ray. In our present frame of mind we would have made a questionable diagnosis of tuberculosis and asked for the X-ray because of the symptoms alone.

M. A., O.D.D. No. 97,905, a 31-year-old American housewife, entered on September 16, 1925, for a physical examination. Her history was negative until her first pregnancy occurred, which terminated three months previously in a normal delivery. During her pregnancy she developed a chronic cough and had on several occasions in the morning noticed small amounts of blood in her sputum. Her baby is at present being treated at the Children's Hospital for tuberculosis. She has had no cough, night sweats or weight loss since her baby was born. Physical examination by both of us showed dullness at the right apex with increased tactile and vocal fremitus and distant bronchial breath sounds. A diagnosis of tuberculosis was made and the patient sent to X-ray. Dr. Sosman reported "stereoscopic films of the chest show no evidence of tuberculosis. The diaphragms move equally and well fluoroscopically."

This is a striking example of group II case. The history was highly suggestive of a pulmonary process and the examination seemed to agree. Yet the X-ray denied its existence, and it is interesting to note that the patient had had no primary or secondary symptoms for more than three months. A negative report was of the greatest value in this case,—although it is to be understood that this patient should be followed for some time as a tuberculosis suspect.

In one morning, therefore, the X-ray prevented us from missing a rather advanced case of tuberculosis on the one hand and prevented us from making a possible mistake in the other direction.

If we take X-rays on all who have symptoms of tuberculosis we shall of course have many negative findings reported. We see no way of avoiding this at present. On the other hand, the positive findings will confirm and elaborate our knowledge of the pathology in the cases which are easily diagnosed,—those in group I—and they will reveal cases which will be missed otherwise—those in group III. We feel then that these advantages more than offset the disadvantages. In fact, the writers have come to be of the opinion that the ideal way of handling patients would be to include an X-ray of the chest at their first visit. This is of course impracticable as yet. The next best way of avoiding error seems to be, as we have indicated, to lean on the symptoms, and not on the physical examination, for guidance in selecting cases for X-ray.

We do not at all mean to imply that the X-ray should take the place of the older methods of diagnosis, such as frequent examinations of the temperature, pulse and sputum. It is simply another method, and one of great value in obscure cases and cases where rapid diagnosis is essential. Nor do we wish it to be inferred that a negative chest examination by X-ray denies the presence of tuberculosis elsewhere in the body, or even in the lungs themselves. As a matter of fact, seven cases which showed no infiltration by X-ray were found to have tubercle bacilli in the sputum. (See footnote page 621.

SUMMARY

A series of patients was studied to determine the best criteria for requesting X-ray examinations of the chest in cases where the physical findings or symptoms suggest pulmonary tuberculosis. The results tend to show that films should be taken whenever the symptoms suggest the presence of tuberculosis, and that the physical findings are less reliable guides.

THE REEXPANSION OF THE LUNG IN EMPYEMA WITH NOTES REGARDING THE MECHANICAL EFFECTS OF CARBON DIOXIDE INHALATION*

BY EDWARD D. CHURCHILL, M.D.

If an empyema cavity is rendered sterile by intensive irrigations with the method of closed drainage, it will heal spontaneously on removal of the tube; but in the large majority of cases the healing of an empyema is accomplished only through the obliteration of the cavity before removal of the drainage material. This is true probably in all cases treated by primary open thoracotomy, in those cases of closed drainage in which a secondary rib resection has been found desirable, and in the cases of closed drainage where it has been impossible to obtain the three negative cultures which indicate that the tube may be removed with safety.

The expansion of the lung is undoubtedly the most important single factor in the obliteration of the cavity, and its failure gives rise to the chronic cavities requiring a thoracoplastic operation for their closure. The principal cause for the failure of the lung to reexpand is the organization of the exudate on the surface of the visceral pleura into a thick, inelastic, fibrous coat. This complication is found particularly in cases where inadequate drainage has favored the persistence of infection, in cases which have suffered a superimposed secondary infection with staphylococci, and in cases primarily due to infection with the hemolytic streptococcus. A further cause for inabilty of the lung to expand is found in fibrosis and contracture of the lung tissue itself, resulting from inflammation and persistent atelectasis. This condition is most frequently met with in cases which have been drained by open thoracotomy at a stage when the pneumonia was yet unresolved. A marked reduction in negative pressure in the presence of bronchial exudate appears to favor complete atelectasis[1].

The age of the patient is also a factor in determining the ease with which an empyema cavity is obliterated. Persistence of a chronic cavity is such an unusual complication in infants and young children that its occurrence is at once suggestive of the presence of a foreign body, most frequently drainage material in the pleural space. The ready expansion of the lung in children regardless of the type of operation performed is easily explained if it be recalled that at birth the lungs completely fill the thorax in an unexpanded condition, and that during childhood the chest wall tends to grow more rapidly than the lungs. As these organs expand to fill the growing chest the negative intrapleural pressure which is the expression of their elasticity, slowly increases.

In the postoperative care of cases of empyema it is of utmost importance to utilize all possible measures which may be employed to promote lung expansion, and to determine the progress of the expansion by repeated X-ray examinations and frequent calibration of the cavity with measured quantities of liquid. If desirable, recourse may be had to injection with a radio-opaque solution to delineate the outline of the cavity.

The following measures are those commonly employed to promote the reexpansion of the lung, and their importance in the care of empyema cases cannot be over-emphasized. In addition, attention is called to the use of the inhalation of carbon dioxide which has proved to be a very effective measure in bringing about the vigorous respiratory movements which favor lung expansion and prevent deformity of the thorax. It is obvious that the use of these measures must be modified to meet the needs and conditions of the individual case, and that the existence of complicating factors such as residual pneumonia, bronchial fistulae, or hemoptysis call for special consideration.

1. *Early Ambulatory Regime:*

Every effort should be made to get the patient out of bed at the earliest moment consistent with his general condition. This not only helps prevent the postural deformities commonly met with, but favors deeper respiratory movements and not infrequently affords better mechanical drainage of the cavity.

2. *Maintenance of a Negative Intrapleural Pressure:*

---

*From the West Surgical Service, Massachusetts General Hospital.

In closed drainage with a catheter the end of the tube is kept clamped at all times except when the cavity is aspirated or irrigated with a tightly fitting syringe. Although it is the usual thing for these cases to show a small pneumothorax even with the most careful technique, the collapse of the lung is minimal, and the repeated aspirations assure the maintenance of a negative pressure within the cavity. This can be demonstrated by connecting the tube with a water manometer before removing the clamp. As the connection between the chest wall and the catheter becomes loose, it would seem unlikely that the degree of negative pressure maintained is significant except during deep inspiration. It should be remembered that at the conclusion of an irrigation the tube should be clamped during a forced expiration.

Many different types of valvular tubes have been described which are employed to exclude air from the pleural cavity. The simplest type is made by tying a finger-cot or condom on the external end of the drainage tube which will collapse and prevent the ingress of air during inspiration, but which at all times will allow fluid to escape. When the patient is in bed a water valve may be employed by allowing the end of the tube to extend two or three inches under water. The difficulty inherent in all such procedures arises from the practical impossibility of keeping the connection between the tube and the chest wall air-tight for more than a few days. Procedures in which rubber dam is sealed to the chest wall usually lead to maceration of the skin and favor secondary infection of the empyema cavity. The employment of such measures in our hands has come to be confined to cases in which an open thoracotomy has lead to actual embarrassment of the respiration.

3. *Relief of Pain:*

When the drainage tube rests upon an intercostal nerve or presses upon the periosteum of a rib, the attendant pain leads the patient to avoid any but minimal respiratory movements. This splinting of one side of the thorax increases the tendency toward scoliosis and serves to inhibit lung expansion. Pain arising from such a source may largely be prevented when a rib resection is performed by isolating the intercostal nerve and either severing it at the medial end of its exposure, or injecting it with alcohol. When intercostal drainage has been employed, the calibre of the tube may be reduced after the first ten days by which time any large masses of fibrin have either been evacuated or have become organized. In many cases merely a readjustment of the drainage tube will bring prompt relief of the symptoms.

4. *Respiratory Gymnastics:*

Deep breathing exercises are of importance especially in children to restore the symmetry of the thorax and promote the reexpansion of lung. Bringing the hands together over the head during a full inspiration should be practiced at intervals during the day.

5. *"Blowing Exercises":*

By a forcible expiration the intrapulmonary pressure is raised and the lung is literally blown out into the empyema cavity. Coughing, talking, crying and other expiratory efforts against a patially closed glottis are particularly effective in creating a momentary rise in intrapulmonary pressure.

The prolonged expiratory effort which is made in the use of the commonly employed blow-bottles is an excellent exercise. The importance of the faithful use of blow-bottles is soon appreciated by intelligent and coöperative patients as they become interested in the reduction of the size of their cavity. The exercise may be made more attractive for children by adding coloring matter to the water or placing floating toys within the bottles. Some children may be stimulated by providing them with a pad and pencil to keep a record of the number of times that the water is blown from one bottle to the other. A small reward may be promised for certain accomplishments.

Similar results may be obtained by inflating a foot-ball bladder or by blowing soap-bubbles.

6. *Carbon Dioxide Inhalation:*

The inhalation of carbon dioxide in the concentration of approximately 5% is at the present time probably the best respiratory stimulant known. Both the rate and depth of respiration are greatly increased. This long known physiological action has been utilized in clinical medicine largely through the efforts of Yandell Henderson[2], and has been found of great value in accelerating the elimination of certain poisons or drugs by the lungs. Its chief use has been found in carbon monoxide poisoning, but it has also been used by Henderson, Haggard and Coburn[3], and by White[4] to hasten the excretion of ether after anaesthesia and to aid in the elimination of alcohol in cases with coma (Mudd and Hunter[5]).

The use of carbon dioxide in empyema is concerned only with the mechanical effects of the greatly increased depth of respiration which it initiates. As the increase in depth is brought about by the promotion of vigorous inspiratory efforts, its action on the collapsed lung is through the creation of a negative pressure within the empyema cavity. In this way it supplements rather than replaces the action of the positive intrapulmonary pressure which is the active force in the blowing exercises. To gain the full benefit of the action of carbon dioxide, the drainage tube should be clamped during the expiratory phase at the beginning of inhalation. The force of the negative pressure is then exerted on the surface of the lung rather than dissipated by the suction of air into the cavity.

The action of carbon dioxide is well contrasted with that of blow-bottles in Figure 1.

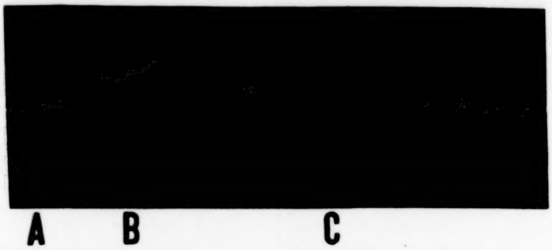


FIG. 1. Tracing of pressures in an empyema cavity in millimeters of mercury with: A, cough; B, blow-bottles; C carbon dioxide inhalation.

This is a tracing of the pressure changes in a post-pneumonic empyema cavity of 100 c.c. capacity taken 40 days after a rib resection. It was made by connecting the cavity through an air-line with a mercury manometer writing on a smoked drum. The effects of coughing, blowing water bottles and of the inhalation of carban dioxide are shown successively.

This tracing demonstrates the complementary action of forced expiration and forced inspiration; the former producing a positive intrapulmonary pressure, and the latter a negative intrapleural pressure. In the employment of the first exercise the drainage tube is to be left open if the lung is adherent; in the second exercise the drainage tube should be occluded.

In addition to the direct effect on the lung itself, the efforts made in the deep breathing produced by carbon dioxide throw all of the inspiratory muscles into action and restore or maintain the symmetry of the thorax. This action is much greater with carbon dioxide than with the exercises concerned with forced expiration, as these latter only utilize the important muscles of inspiration during the deep breath at the beginning of the procedure.

It has been found convenient to use the carbon dioxide inhaler as employed by Henderson in the de-etherization of post-operative cases, although it is probable that any of the devices for utilizing rebreathing would be equally effective. The tank is left at the bed-side of the patient after he has been instructed in its use, and the duration and frequency of the exercise are varied to suit the needs of the individual case. The average ambulatory convalescent case inhales the gas for five minute periods fifteen or twenty times a day. As far as is known there are no deleterious effects to be expected, and in fact the dizziness and other unpleasant subjective symptoms which are apt to attend too vigorous employment of other respiratory gymnastics do not occur with the use of carbon dioxide. This is to be expected as the origin of these symptoms is chiefly due to the blowing off of carbon dioxide from the body.

SUMMARY

1. The healing of the majority of cases of empyema is dependent on the obliteration of the cavity.
2. The usual methods employed to promote reexpansion of the lung are discussed.
3. The use of carbon dioxide inhalation for its mechanical effects on the lung and thorax is described.

BIBLIOGRAPHY

1 Churchill, Edward D.: Arch. Surg., 1925, XI, 489.
2 Henderson, Yandell, and H. W. Haggard: Jour. Amer. Med. Assn., 1922, LXXIX, 1137.
3 Henderson, Yandell, H. W. Haggard and R. C. Coburn: Jour. Amer. Med. Assn., 1920, LXXIV, 783.
4 White, J. C.: Arch. Surg., 1923, VII, 347.
5 Hunter, F. T., and S. G. Mudd: Boston Med. and Surg. Jour., 1924, CXC, 971.

MODERN MEDICAL TENDENCIES*

BY JOHN A. ROCKWELL, M.D.

To cover the ground of modern medical tendencies in even the most rapid manner requires first a glance at the evolution of medicine. Told at full length it is one of the most fascinating and constructive chapters in the book of man's progress, but a bare outline fires the imagination and arouses wonder and gratitude. Beginning with the slowly awakening mind of early man and what must have been his dull resentment and baffled questioning at suffering and death; through the age of beating the tom-tom to drive away the evil spirits of pain;

---

*Address of the President at the Annual Meeting of the Massachusetts Homoeopathic Medical Society, Boston, April, 1925.

through the different stages of medical knowledge, ever growing in importance, when men of vision struggled step by step through a jungle of difficulties, patiently hewing away the growth of ignorance and superstition and prejudice and making the trail clearer for others to follow, inspiring them with the will to work, to persevere, to succeed;—we have come to the present time and the great modern blessing of preventive medicine.

Hippocrates, "the father of medicine", is followed by a long list of famous names and great achievements:—Paracelsus, Harvey, Linnaeus, Hahneman, Jenner, Ebert, Koch, Pasteur, Behring, Ross,—to mention only a few of "the Peaks in Darien". And there is another list, even longer, of men who have faithfully and often brilliantly gone through the steady necessary routine outside the spotlight, often putting aside their hopes for the sake of present duty, and to them honor is also due.

What these gifted men have done in biological, bacteriological, and chemical research, and the adaptation of their discoveries to the elimination or control of diseases, may have become to many of us the commonplaces of medicine, taken as casually as we take all the other wonders of science, but we can not think of the world without them. Without their development the present understanding of the human body and its limitations and possibilities would be greatly curtailed. Dread disease, after dread disease, has gone down before the steady advance of scientific research and its healthy offspring—preventive medicine and preventive methods. The great medical discoveries are the result of the capacity for taking endless and exact pains, combined with a vivid imagination and an Antaeus kind of courage which refuses to be downed by repeated failure and is willing to prove each step true before the next is taken, and what might be called materialistic altruism. Science is imagination mixed with brains and patience, and its aim is truth.

In our own lifetimes we have seen yellow fever, diphtheria, typhoid, lose their terrors. Tuberculosis is no longer the devastating plague it once was, and preventive medicine is swiftly bringing it under control. Cancer is being studied with the unswerving determination of finding its causes and also finding a safeguard and cure. The ever growing knowledge of the many causes of kidney and heart disease, some of them unsuspected a few years ago, is giving added protection to these organs in time of health, and greater possibilities of cure when attacked by disease. Work on the ductless glands is steadily progressing, as well as in all branches of that insidious disease—anemia. It looks like very lean times ahead for diseases, for one and all they are marked for mastery.

In this great onward sweep of health, preventive medicine and methods have borne their full share of responsibility and honor. Think what vaccination, inoculation, pasteurization, and sanitation, have done for the world. The ideal of the medical profession has become one of *preventing* illness, of *keeping* people well. In the days of our grandmothers, or even our mothers, children were believed to be born to trouble in the way of measles and scarlet fever and whooping cough, which were calmly and fatalistically called "children's diseases"; but nowadays, child after child is growing up without any experience of sickness beyond a "cold" once in a while, and even those are doomed by preventive medicine. People look rather askance at children who go through the old-fashioned round, and the family physician calls in the plumber, and also has the milk supply inspected, and the children themselves are inspected from top to toe.

The majority of established general practitioners realize the importance of this great power to help, which preventive medicine and methods gives them. The public has absorbed avidly all possible information, and, sad to say, sometimes misinformation, and although it often cheerfully puts the cart before the horse, the desire to know has been awakened in the lay mind, and the physician is quick to take advantage of the opportunity it offers to drive home the fact that the public must bear its full share in the responsibilty of seeing preventive methods of all kinds, which have taken so much research to achieve, are carried out. If a kingdom can be lost "all for the lack of a horseshoe nail," so health and life may be lost by carelessness in observing the rules of preventive medicine. It is heartening to see how deep the interest is becoming, and an illuminating example of the application of preventive methods is found in the work of the Federal Public Health Service and shows the tremendous strides toward bettering conditions which have been taken. In 1798 its initial efforts toward improving public health were confined to "seamen of the Merchant Marine." Today its ramifications include uniform practices at quarantine stations throughout the country resulting in a great benefit to commerce, as well as protecting the public health. This same department has met the problem of drinking water supplies on interstate carriers, has supplied rural America with local health service, distributing health information through every channel, including radio broadcasting, has established venereal clinics throughout the nation, controls interstate traffic in biologic supplies, as well as carrying on scientific research; all of which service is in close liaison with State Boards of Health and medical associations. General health education given in the public schools, and popular lecture courses by members of different medical faculties, are among the numerous methods used to disseminate knowledge. Various clinics, especially baby hygiene and tuberculosis associations, have done a huge work in reducing baby mortality and the "White plague".

On the more individual side one sees, all along the line, the application of preventive ideas—periodic health examinations by the family physician with their resulting home educational value: the corrective work done by the physical education departments of our universities, as well as the public discussion by their medical departments as to causes, progress, sequelae of disease: vital resistance, personal hygiene, temperance; all of which prevent suffering and economic loss.

This great advance in learning and opportunity which scientific research has made possible for the medical profession is also beginning to cast a shadow over it, for it is slowly developing a very real danger both to the profession and the public alike. It is simply that we are progressively losing the art of medicine as we climb its scientific heights. The fascination, thralldom almost, of intensive study in some special department of medicine or surgery is steadily attracting more and more medical students to the branch of specialization, and is thus, as steadily, depleting the number who decide to be general practitioners. This holds the promise of a sea of trouble in the future for there is no doubt of the looming danger of the passing of "the family doctor". It is a matter which should be faced *now* from all angles, and not allowed to drift until some fine day we wake up to the fact that the general practitioner is as extinct as the dodo. There is plenty of room for both branches of specialist and general practitioner, and both are absolutely necessary to the world's welfare, and the old traditions and practices of the profession are too precious to be lost. The general practitioner holds a very special niche in the world's needs, and young men who are taking up medicine as their life's work should think seriously of the matter. A splendid past should spur us on to achieve a splendid present, or we are traitors to the future. That is one of our human responsibilities—not to "let down" the future, to have no weak steps in the stairs we build.

The science of preventive medicine has not as yet achieved its aim of keeping all the people well all the time, and so convalescence is still among those present, but prevention, in its wisdom, insists it must be a guarded convalescence. "The stream of life is ever toward health—the normal—and one must be careful not to interfere with nature's processes." The simple days of the doctor's saying "don't do too much," and letting it go at that, are long passed, and laboratory findings and physical examinations form the basis of positive advice in each individual case. Why put the responsibility of his convalescence on the patient's shoulders and expect him to comprehend his physical limitations without help? A new set of duties begins for the physician with the "normal chart" readings, and include instruction about diet, exercise, the care of the intestinal tract, massage, rest, sleep, occupation and mind distraction. Instructions have to be extremely specific and extremely tactful to a sick person, and wide general experience together with a sympathetic understanding of human nature are necessary to qualify one to successfully meet this difficult time of recuperation. I speak of the need of tact in the treatment of convalescents because the subconscious desire of each one of us is to believe himself on the high-road to health, which is, of course, a great help, but makes him resentful of being held back. A physician knows there are, unfortunately, many reasons, chiefly business, financial, or family, which turn a docile patient into a more or less fidgety *im*patient during the time of convalescence, and he must use his knowledge of the patient's temperament to convince him he is impersonating the tortoise, for the time being, not the hare, and if he will act the part as it should be done, and "make haste slowly", he will win the prize of health. It is now understood that the depletion of the stores of energy is responsible for fatigue, hence the recuperating power of *rest* which permits restitution of the loss. It is one of the problems of a physician to find a way to make the idea of it attractive to a convalescent, after a certain stage has been reached, and not as irritating as the proverbial red rag to a bull.

Another medical tendency of today, as preventive medicine approaches the highest hopes of successful application, is for a physician to give advice to normal and healthy persons in active life. This is in line with what I have already said of no longer waiting for the S O S call of despair, but to take time by the forelock and teach one's patients the sense, and economy also, of preventive measures of all kinds for all ages. They must learn the pleasure not only of getting well, but of keeping so. In other words, the physician expects to keep his clientèle healthy and vigorous by selected and discriminating suggestions which the individual in question requires. The expectant mother should be thoroughly informed of the approaching events, and also told about safe-guarding the child's future in many ways. The nursing mother should be guarded against outside activities of a multiple nature which not only distract her from her devotion to her child, but also indirectly interfere with her function as the nutritional essential to her offspring's health. The problems of food, exercise, recreation, clothing, sleep, and personal hygiene, are all matters which should be under the guidance and control of the physician in his family practice, and he should be on the outlook for slight abnormalities and meet them as they arise. During the adolescent period very definite intelligent instructions should be given both boys and girls. Properly given, this offers tremendous assistance to parents in meeting this vexed problem, and a physician often finds that parents, themselves, need advice about how to help their children at this time, for, strange as it may seem, many of them appear to have no comprehension of the situation. The nutritional side should include advice about dietic defects which might create one or another group of symptoms and thus might interfere with the best development of the individual; also the possibilities of tooth, throat, sinus, and intestinal focal-infections must be gone into; also the protection against disturbed sleep, often due to over-eating, over-excitement and fatigue, is a most important feature at this stage of life and has received altogether too insignificant attention.

The habits shown in young adult life will react graphically to just what degree the earlier training and educational efforts have been successful. Here again, loss of sleep, poorly selected food, the normal failing of "know it all" in young men and women, (often used to hide the fact they really do not know at ali and would not have you suspect it,) acting in a foolhardy manner, thinking they are demonstrating evidence of courage, the causes of self-consciousness and lack of self-confidence: all these are definite signs of youthful misjudgment which it is the physician's duty to control with sympathetic understanding. Ambition and the keen interest in life must be kept ablaze, but must be directed, and a good many words of warning can be dropped into the incredulous present sub-consciousness of youth which may appear in later years and serve as a timely drag on the wheels of exertion.

In mature adult life, (the storm center of progress,) prosperity and the habits of application of the well-trained man or woman, whose earlier environment has been properly safeguarded, call for less in the way of preventive measures. This age finds a better balance in all things emotional and mental, and the dangers which befall many at this time, especially toward the latter part, are, the grip of a strenuous business or social life is allowed to tighten, adequate sleep is apt to be disregarded, and there is often a tendency to overeat, or undereat, or eat an unbalanced diet, and exercise is either insufficient or erratic: all dangers which can lead to disaster. It is also the period when the thrilling heights of conscious and perfect health are reached, and so it is the age that burns the candle at both ends, and says smilingly,

"But oh my friends, and oh my foes,
It gives a lovely light."

With the next decade comes a subtle change, often caused by mind and matter being a bit at odds. To quote from an old and amusing print showing "The Ages of Man,"

"Strength fails at fifty, but with wit,
Fox-like, he helps to manage it."

Nowadays, however, we know if we allow our strength to fail too fast, our wit is not to be counted on either. Stevenson, and the others, ill, or growing old, or both, may serve as the great exceptions, but the rule still stands—to have our brains at their best, our bodies must be also.

No one grows old nowadays in the old-fashioned meaning of the term, and advice given to this group, no matter in what walk of life, is difficult of accomplishment. Janus-faced, they might be called, looking back a little longingly at youth, and forward a little reluctantly to the coming years. None of us wishes to acknowledge the fact that the years have begun to take their toll, and because of this it is often the time of great explosions and disasters of many kinds. The family physician must be ever ready with his preventive ideas, taking each one of his patients at his or her own special angle. We must learn, not so much to grow old gracefully, as to cease being young gracefully.

As we pass on into succeeding decades a physician finds the ever present antipathy to acknowledge physical powers of today are not what they were, is steadily growing stronger, and it takes much judgment and finesse to convince people that a let-down of activities and the protection of bodily functions must be realized. Human machinery, like any other, shows the wear and tear of years, and the majority of mankind must be guarded against themselves, because, as we all know, it is an ingrained belief in most of us, that disaster may come to others, but not to us. The privilege of age, the will to know, and the will to do, are all too often used as excuses to over-rule that which is best for the individual. Serenity of mind is a great preventive of many ills, and the heat and fever of our strenuous days should drop from us naturally during these later years. It should be the time of curtailed effort and a calm outlook on life colored with the wisdom we are supposed to gather on our journey, and as our sun sinks low in the west we suddenly will realize the great campaign of preventive medicine has already changed the last years of life from the pitiful and subtly tragic "lean and slippered Pantaloon" to years capable of great usefulness and happiness. And it is the aim of preventive medicine to better Shakespeare, and instead of an old age

"Sans teeth, sans eyes, sans taste, sans everything," to have it,
Cum teeth, cum eyes, cum taste, cum everything.

And even add a worthwhile decade or two to the span of life.

The modern physician's scheme for upbuilding and strengthening the human structure, together with guarding the activities of his patients through succeeding years, and maintaining high standards of physiological functioning, is similar to the mechanical device used on motor trucks and known as a "governor". This accessory limits the maximum speed without interfering with legitimate degrees of progress. It prevents the machine being forced beyond its greatest efficiency, and insures a longer life with a higher average of usefulness.

This parallel seems peculiarly apt, for a physician must advise, develop, and protect the best that is in the individual, and prevent, through wise counsel, the overspeeding in any of his fields of endeavor, without which advice a man may wreck his structure before his time, or be unable to maintain full capacity for normal accomplishments. We should feel a common interest in this matter of individual protection and eliminate the disease so often called by foreigners "The American Disease", i.e. over-speeding and rushing beyond the limits of human endurance. We might call it The Great American Nullification Act, for it brings to naught much of the splendid work of preventive medicine. There is not much gain in escaping a Scylla of diseases only to fall into a Carybdis whirlpool of self-made exhaustion. Preventive medicine has saved untold suffering and uncounted hours for the human race, and this added health and time should be used to better advantage than in a breathless nerve-racking pursuit of business or pleasure. To escape the breaking point by a wide margin does not mean one is rusting out; it means one has gained the power to appreciate the worth-while things of life. To the very young it may mean we are most decidedly "of age", (as voters may say in New York,) but in a few years they, too, will realize it truly means we know that health can make life far more vivid and interesting than any nervous and exhausting search for excitement ever can. It is the part of the general practitioner to make this more fully understood and acted upon. He must be the "governor" to the human machines put under his inspection and care.

In all sincerity the physician tries to apply in his daily rounds the spirit of service and personal sacrifice, and bring home to his patients a better understanding of the high aims of the Art and Practice of Medicine. And when we, physician and patients alike, have run our course, and an end has come to our day, may we meet the test—

"For when the One Great Scorer comes to write
against your name,
He writes not that you won or lost, but how
you played the game."

PUBLIC HEALTH AND THE FEDERAL GOVERNMENT

BY JAMES A. TOBEY

Although the care of the public health is, under our system of government, entrusted primarily to the individual states, the national government appropriates annually for public health purposes about three quarters as much as do all of the states combined. The total official and private expenditures for preventive medicine in the United States from national, state, and local sources, are estimated to aggregate about $75,000,000. Of this sum the national government contributes one-fifth, and it is, therefore, the largest single public health agency in the country.

To call this a "single" agency is, perhaps, inaccurate. The federal service may be a unit as far as collecting and controlling the funds used for health work, which, incidentally, comprise only one-half of one per cent of the total national yearly budget; but when it comes to the disbursement of this $15,000,000, the unity ceases. There is no one central health agency in our government as there is in Great Britain, France, Germany, and a dozen other countries where ministries of health have been established. Instead, public health activities are carried on by the United States in each of the ten executive departments and in several of the independent offices besides. Of the hundred or more major administrative units of the national government, fully one-third are concerned directly or indirectly with some phase of public health. In only half a dozen instances, however, can public health work be said to be the primary function of a particular bureau. In the other cases it is secondary, though such work may also be important, or else it is a more or less casual activity, subordinated entirely to the general scope of the bureau.

The present system with its lack of correlation is obviously wrong. Under the Constitution, the national government does have certain proper health functions. These include the power over foreign and interstate commerce, the power to tax and incidentally to regulate, the power over the territories and federal reservations and the citizens thereof, and various miscellaneous powers, such as the making of treaties. These powers, with respect to national vitality, have been exercised to some extent almost since the time of the adoption of the Constitution in 1789. It is only since the last decade of the nineteenth century, however, that the federal government has expanded its public health work. It was not finallly conceded until 1893, for instance, that maritime quarantine was a federal rather than a state matter.

Thus, in the endeavors to keep disease from entering the United States, and to prevent disease from spreading from state to state; in the interests of developing methods to cope with morbidity and of informing the public about such methods; and in the desire to promote national vitality generally, Congress has from time to time passed many laws relating to public health. These laws have, naturally, required agencies and appropriations for their enforcement. As a consequence, portions of the $15,000,000 granted for public health go into quarantine; medical inspection of immigrants; control of biological products in interstate commerce; enforcement of the federal pure food and meat inspection laws; conservation of the health of the Indians, and other wards of the government; coöperation with the states in such matters as the protection of maternity and infancy, and rural hygiene; enforcement of taxation laws on narcotics, white phosphorus matches; and other commodities; and, finally, research and instruction of the public. Whether all of these laws are justified or not may be a question, and in respect to such matters as federal subsidies to the states it is very much of a question at present.

In addition to these public health duties, it might be remarked that the national government undertakes many medical relief activities. For medical and hospital care of veterans, for care of the government insane, of other wards of the government, and for relief to its employees, more than three times as much is spent as for preventive or public health duties. It is not beyond the realm of possibility that more money efficaciously expended for prevention would have reduced and would in the future diminish the amount necessary for relief and cure.

In order to attempt to correct the present dispersed condition of federal health work, a bill (H.R.10125) to coördinate the public health activities of the government has been introduced in the House by Representative James S. Parker of New York, who is chairman of the Interstate and Foreign Commerce Committee, to which committee the bill has been referred. On March 8th, when this bill was entered, it was one of about 14,000 bills which have been introduced in the first session of the Sixty-ninth Congress. Little of this legion of legislative material is of interest to physicians and sanitarians, but the Parker bill is of real importance. This measure was drafted after consultation with eminent representatives of the public health profession, who for almost the first time in the history of American public health were agreed as to what they wanted. It has the approval of the Surgeon General of the Public Health Service.

This bill, "to provide for the coördination of the public health activities of the Government," authorizes the President, whenever he finds that it will promote greater efficiency in the conduct of public health work by the Government, to transfer by Executive order to the Public Health Service all or any part of any executive agency, other than an agency of the military or naval forces, the War Department, the Navy Department, and the United States Veterans' Bureau, engaged in carrying on a public health activity. In lieu of such transfers the President would be authorized to direct that officers of the Public Health Service should be detailed to other executive agencies to supervise or coöperate in public health work undertaken by them. The Surgeon General would also be authorized to detail officers when requested to do so by other departments, or to detail them to outside educational and scientific institutions. Facilities of the Hygienic Laboratory could likewise be made available to health officials and scientists engaged in special studies.

An important provision of the bill is that which would give to properly qualified scientists a commissioned status the same as that now enjoyed by medical officers. Thus, sanitary engineers, dentists, and other scientists would be appointed by the President after examination and upon recommendation of an examining board convened by the Surgeon General. A nurse corps, similar to that of the Army, would also be created. There would be established a national advisory health council of thirteen members, representing the public health profession of the country.

If this measure should be adopted, the President could by Executive order terminate the present scattered condition of federal health activities. The Public Health Service is an appropriate nucleus for the coördination of such work, for it is the oldest, largest, and best equipped health agency of the government. It is, in fact, the only bureau which now is exclusively devoted to public health duties, though there are divisions of other bureaus which do nothing but health work. Thus, the Division of Vital Statistics of the Bureau of the Census in the Department of Commerce does the national health bookkeeping. There is general agreement that this function should be transferred without delay to the Public Health Service.

A comprehensive study of all the health activities of the government has recently been completed under the auspices of the Institute for Government Research of Washington, D. C., and will be issued this spring as a book entitled "The National Government and Public

Health." The information compiled in this volume should serve as the basis for determining transfers and changes in federal health work. This study, which consumed a year and a half, was made with the advice of a group of eminent physicans and sanitarians, and a committee of the American Public Health Association has also kept in touch with this project. A delegation of prominent sanitarians visited the President on January 14, 1926, and urged the desirability of early action on coördination of health resources.

The plan for correlation of federal health activities, as reported by the Institute for Government Research, recommends that consideration be given to the transfer to the Public Health Service of the Division of Vital Statistics, as mentioned above; St. Elizabeth's Hospital, the Government institution for the insane; certain nutritional research now performed by the Bureaus of Chemistry and Home Economics of the Department of Agriculture; and the Medical Division of the Office of Indian Affairs of the Department of the Interior, except that in this last case the medical personnel, though attached to the Public Health Service for purposes of scientific direction, would be detailed to the Commissioner of Indian Affairs for administrative direction. It is also recommended that the Children's Bureau, now in the Department of Labor, should be under the direction of the same Cabinet officer in charge of other federal health activities.

The detailing of medical and scientific personnel should be made to: the Division of School Hygiene of the Bureau of Education (Interior Department); Bureau of Labor Statistics (Labor Department), which carries on studies in the field of industrial hygiene; and to the Bureau of Animal Industry, Bureau of Dairying, and Extension Service, all of the Department of Agriculture. Medical officers are already detailed under existing legal authority to the Bureau of Mines (Commerce), Consular Service (State), Bureau of Immigration (Labor), Coast Guard (Treasury), Bureau of Chemistry (Agriculture), and the Alaska Division, Bureau of Education (Interior), which attempts to care for the health of the natives of Alaska.

Nearly half a century ago, the United States had a National Board of Health. It was created in 1879 for a four year period, its activities were restricted by Congress in 1882 to studies of cholera, yellow fever, and smallpox, and the act establishing it was repealed in 1893 after the board had been dormant for a decade. An attempt to secure another national bureau of health was made in 1910 and 1912 during the presidency of Mr. Taft, but was not successful. The present scheme calls for no expansion of federal health functions, but merely for a better arrangement of existing activities. It does not even provide for an assistant secretary for public health, though such an official might be desirable, and may eventually be secured.

The indications are that the Parker bill has a good chance of passage. In the opinion of eminent sanitarians, the adoption of this measure would be the most progressive step in the enhancement of the opportunities for more efficient operation in the field of national vitality, which has been presented during the last fifty years. The bill ought to pass if the medical profession and the public health profession make it a business to see that it does pass.

A PERSISTENTLY PATENT URACHUS

BY WELLER VAN HOOK, M.D.

On two previous occasions I have reported developmental anomalies of the urachus. The first[*] case was that of a baby that developed suppurative inflammation in a cystically dilated urachal remnant. The tract became obliterated under treatment.

The second case was that of a woman of twenty-three years who suffered from a slight discharge at the umbilicus that became purulent, necessitating extirpation of a urachal remnant.

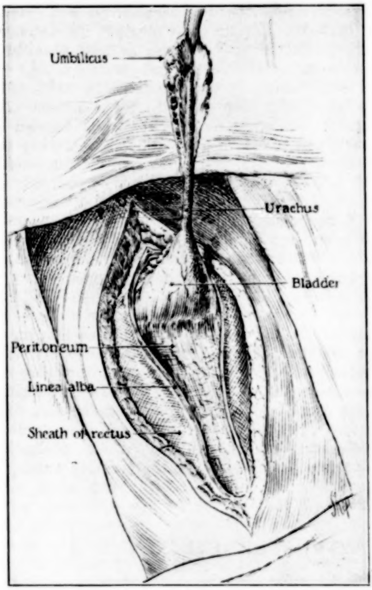
A third case of this type of developmental anomaly came under my care recently in the person of a man of eighteen years who was suffering from acute appendicitis of about five days' duration, with perforative but localized peritonitis. When about to study the appendicitis conditions the unusually deep umbilical depression, about seven-eighths of an inch in diameter, was seen to be filled with urine. The attending physician stated that part of the urine had escaped at the umbilicus from the boy's birth and that nothing had been attempted for its relief. The amount of urine lost at the umbilicus varied with the pressure relations. The large patulous umbilicus could be seen to be patent, the opening, near the center of the navel, being about two millimeters in diameter. A probe passed down to the bladder when the operation was done. There were no other malformations.

Upon operating for the appendicitis I determined to give relief at the same time to the urachal anomaly, especially as the emergency conditions were such that it seemed probable that no serious difficulty would arise from combining the two procedures.

---

[*] Am. Jour. Obst., 1894, XXIX, 624.

Accordingly, at the operation, the umbilicus was separated from the surrounding skin and connective-tissue, somewhat more skin being removed at the lower part of the navel, and the skin wound was extended downward to the bladder region. The umbilicus, with the upper end of the persistent urachus and the two hypogastric vascular cords, was now raised out of the wound under a little tension. The connective-tissue between the two rectus sheaths was then split and the raised mass, consisting of umbilicus, urachus, hypograstric strands and a little connective-tissue, was drawn up and stripped, by gauze tampon dissection, from the surrounding fat and the underlying peritoneum. The latter phase of the work offered no difficulty. It was not necessary to open the peritoneum or to interfere with it in any way. The intestines were observed to lift the peritoneum, as they underwent peristaltic movement, and showed in outline beneath it.



The mass having been stripped down as a fairly narrow strand to the bladder, a good catgut ligature was tied well about the isolated tissue near the vesical end and the strand was divided with the scissors above the ligature. The recti muscles and their sheaths were brought together with chromicized catgut stitches and the skin closed with silk-worm gut. A small gauze drain was left at the lower angle of the wound. A compress wet in strong antiseptic solution was placed over the wound, and the appendicitis operation was done. Pus was found about a perforated appendix and drains were left.

The patient made a normal appendicitis recovery under the conditions. The urachus channel suppurated mildly after some days and urine escaped for about three weeks, but ceased under routine treatment. The boy is now in excellent condition; both wounds have granulated up with strong scar-tissue.

Legueu (*Clinic de Necker*, 1922) cites the thesis of Jean Monod, 1899, regarded by him as quite complete and containing the collected reports of 56 cases, the single cases of Kirmisson, of Imbert, of Pachet, of André and of Boeckel. He does not cite my cases nor does he refer to the classical work on *The Diseases of the Umbilicus* by Cullen! His own single observation may be briefly summarized:

Boy, six years, had passed his urine from birth through the umbilicus; wore an apparatus. Legueu began his incision four fingerbreadths above the pubes and carried it up to a point just above the umbilical fistula. The badly formed linea alba, slightly stretched, was divided down to the praevesical tissue. The fistula was circumscribed by a circular incision that opened the peritoneum at the umbilical level. The peritoneal incision was completed downward to correspond with the superficial wound. The bladder, elongated conically upward, was associated with a persistent urachus that was practically a part of it. This seemed very large. For no stated reason other than that the bladder seemed large the top of the bladder was resected and sutured. The peritoneum was closed above and behind the bladder.

Two phases of this operation seem unnecessarily severe. There seems no reason why the peritoneum was opened; it seems probable that the urachus would have stripped off the peritoneum as well as it did in my own case. And there seems to have been no reason for the resection of the bladder, which is known to adapt itself with the utmost ease to capacity requirements. The opening of the peritoneum or the resection of the bladder, if done in many cases, might occasionally cause death and should not be a part of routine treatment.

AN ISOLATED CASE OF ERYTHEMA ARTHRITICUM EPIDEMICUM

BY KATHARINE DODD, M.D.

THE following case which was seen at the Harriet Lane Home of the Johns Hopkins Hospital in June 1923 is apparently an instance of the disease, erythema arthriticum epidemicum, reported in this JOURNAL on February 18, 1926, by Place, Sutton and Wilner as a new type of disease.

The clinical and laboratory findings correspond almost exactly with those reported by the Boston physicians. However, the Baltimore case was, as far as could be determined, an isolated case and the etiology was more probably rat bite than contaminated milk as was suspected in the cases recently reported.

SUMMARY OF CASE

The patient, Carrie S—, a ten year old white girl, was admitted to the hospital on June 8, 1923, complaining of fever and headache. The onset of the illness was three days before when the child awoke with a wound on her left hand which her mother attributed to the bite of a rat. That afternoon she complained of not feeling well. The next day she was feverish and had a severe headache. She vomited once. The headache and fever continued throughout the third day and there was extreme anorexia so that the child ate nothing. The mother noticed that she began to breathe rapidly.

On admission to the hospital the child lay on her side with her eyes closed. She was breathing rapidly and looked ill. She answered questions rationally but lay quite still and would not move when asked to do so. There was a well marked herpes labialis. The skin of the proximal phalanx of the little finger of the left hand was tense and shiny and there were two pin head wounds on the inner surface. The pharynx was mildly injected. Over the entire right lung the breath sounds were suppressed but normal in quality. The percussion note of the lungs was normal.

The day after admission a widely distributed maculopapular eruption appeared over the trunk, arms and legs. The eruption involved the soles of the feet where a few petechial hemorrhages were found. The child complained so bitterly of pain in the muscles of the left leg and pain on motion of the same leg that a surgeon was called in consultation, but no surgical condition was found.

By the next day the eruption was fading, except on the soles of the feet where there were a few superficial blebs and pustules. The child cried with pain on motion of her arms and legs and even her fingers.

The pain in the joints continued almost unabated until June 18th, thirteen days after the onset of the illness. At this time the child began to move her fingers voluntarily and three days later was able to sit up in bed and move all her joints without pain. At no time was there any swelling or redness of the joints. No definite signs of pneumonia developed. The child was discharged well on July first.

On admission the temperature was 103.8°, the pulse 112, respiration 32. The white blood count was 14,400. The temperature remained elevated for the first five days after admission, fell to normal, rose to 100° and was again slightly elevated for nine days. A vaginal smear was negative for gonococci. The blood Wasserman was negative. A roentgenogram taken June fourteenth, six days after admission, was reported, "Lungs clear." Two blood cultures, the first made on the day of admission and the second made five days later, both showed after five days of growth small greenish colonies, all deep in the plate. The colonies were composed of gram negative rods varying in length from long filamentous forms to short almost coccus like forms. On these filaments appeared after many days of growth occasional swellings which were thought to be spores. The organism did not grow when transplanted in the more usual laboratory media, but grew well deep in ascitic agar. A third blood culture, taken July first, at the time of discharge, was negative.

A rather careful search of the literature disclosed no similar case report. The organism did not correspond to any which was known to be the cause of a well known disease. Although the bite of a rat was presumed to be the probable mode of entry of the infection, the history of rat bite was not very clear, and a sister who suffered from a lesion of the hand similar to the patient's was not ill. The case remained undiagnosed until this year when the writer noticed that, with the exception of the fact that the organism obtained from the blood culture grew only deep in somewhat special media, the case was practically identical with those reported from Haverhill, as erythema arthriticum epidemicum.

NATIONAL BOARD OF MEDICAL EXAMINERS

RECENT DIPLOMATES DISTRIBUTED BY SCHOOLS

DURING the calendar year of 1925 there were 206 physicians who completed their credits in the National Board's examinations by having passed Part III. All have been awarded the Certificate of the National Board to be delivered upon the payment of the final installment of the fee. The Medical Schools from which these diplomates graduated are as follows:

Harvard	38	Virginia	7
Pennsylvania	26	Oregon	6
Rush	25	Minnesota	5
Johns Hopkins	16	Buffalo	4
Woman's	10	Columbia	3
Washington	9	Creighton	3
Yale	8	Illinois	3
Cornell	7	Pittsburgh	3
Jefferson	7	Vermont	3

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 12141

CHILDREN'S MEDICAL DEPARTMENT

A Jewish boy seven years old entered October 31. He had been unconscious since morning.

His family history was good. The living conditions were not. The family lived in a street floor flat, with very little sunlight and poor ventilation.

At six months old the boy had a convulsion of unknown nature lasting five minutes. At two years he had measles, at three years chickenpox. The May before admission he had red, painful and swollen joints. At the Out-Patient Department a diagnosis of subacute articular rheumatism was made. October 1 by the advice of the Out-Patient Department his tonsils and adenoids were removed at this hospital, and he was kept in bed for two weeks. He then got up and went to school, feeling fairly well. He was sent home by the teacher on account of cough, and went to bed again. A week before admission to the hospital he began to vomit three to five times a day after paroxysms of coughing. The vomitus was white and frothy; once the day before admission it was green. Three days before admission he was up and playing. Next day he stayed in bed. The following day he did not speak, but answered questions by nodding his head. At noon he began to have bilateral convulsions, worse on the right side. The morning of admission when his mother picked him up he had a convulsion lasting ten minutes, characterized by twitching of the neck and mouth muscles. When put to bed he had three or four recurrences. A physician who was called found him unconscious.

In the Emergency Ward paralysis of the right side was discovered. A lumbar puncture gave clear fluid under no pressure, with no block; two cells.

Examination showed a well nourished boy, rather large for his age, unconscious, convulsive and cyanosed, requiring oxygen. The skin was cold, clammy, mottled and cyanosed. There was an evanescent strabismus, nystagmus, and left conjugate ocular deviation, but the eye did not return beyond the midline to the right. The pupils were pinpoint; regular and equal. They did not respond to light. During a slight convulsion they were both widely dilated. The eyegrounds were not examined. The mouth was held tightly closed, requiring considerable force to introduce a mouth gag. The lips were cyanosed. There was some tremor of the tongue, and it seemed very weak or partially paralyzed. Nothing could be learned about the tongue muscles. There was no stiffness of the neck. The submaxillary glands were only slightly palpable. The chest rose and fell irregularly and unequally—Cheyne-Stokes breathing, varying in rate from 8 to 28. The breath sounds were clear except for the transmitted throat noises. The heart beat was seen in the fifth space inside the nipple line. The rate was irregular, 60-115. The right border of dullness was 2 cm. from midsternum, where there was a possible thrill. The left border was 5½ cm., the midclavicular line 6½ cm. There was a soft systolic murmur, most audible at the apex, not transmitted. A little above the apex was heard a late diastolic murmur. The blood pressure was 140/100. Electrocardiogram showed normal rhythm, rate 80. The abdomen was flat and soft, without reflexes of the right rectus. The spleen was just palpable. The genitals were negative. The cremasteric reflex was absent on both sides. The right arm and leg were flaccid. During the convulsions, which were clonic, there were fine twitchings of the extensor leg muscles and arm muscles. No other movements of the arm and leg muscles were seen. The knee-jerks were absent on the right, slight on the left. There was suggestive Babinski on the right, none on the left. Sensation to pin prick was present over the entire body. There were several black and blue spots on the legs and arms. The axillary and inguinal glands were small.

A catheter specimen of urine was clear and acid, not sufficient for a test of specific gravity or of sediment. November 4 the urine was alkaline, specific gravity 1.022. Sediment, 1-4 leucocytes per high power field. Blood: hemoglobin 90 to 100 per cent., reds 7,370,000-6,440,000, smear normal, leucocytes 40,250-25,370, polynuclears 63 to 42 per cent. Wassermann negative. Three blood cultures negative. Hematocrit test 37 per cent. cells. Lumbar puncture November 3: initial pressure 100-105, jugular pressure 190, cardiac and respiratory oscillations normal, final pressure not taken. 10 c.c. of clear fluid removed, cell count 4, three cultures negative, total protein 52, goldsol 0011210000, sugar 87, chlorides 696, non-protein nitrogen 14. Blood plasma: sugar 93, chlorides 563, non-protein nitrogen 41. Tuberculin 1-1000, human positive.

X-rays of the skull showed no lesions suggestive of fracture. The convolutional mottlings were prominent throughout the skull. The size of the heart shadow was slightly above the normal. There was nothing unusual in the shape of the heart. The lungs showed moderate increase in the hilus densities. No definite pathology was found.

Orders. October 31, retention enemas, 5 per cent. glucose ℥ iii every three hours. November 1, sodium bromide gr. x by mouth, 1:30 and 5:10.

The temperature was 102.6°-97.8°, the pulse 131-65, the respiration 10-51, all falling to normal by November 5. The blood pressure was 143/62-130/40-100/60.

The report of the special nurse on the night of admission shows a slight rise in systolic blood pressure (116-120) and of temperature (101.8°-102.2°). Fluids were forced by mouth and by rectum and were retained. Oxygen was given at five and six forty-five a. m.

November 2 the condition seemed somewhat better. The cyanosis was gone and the color was improved. He moved the right arm and leg, but less than the left. The reflexes were still absent on the right. For the first time a Babinski was obtained on the right foot. The right abdominal reflex was still absent, and the left Babinski negative. There was a Brudzinski, also a bilateral suggestive Kernig and neck rigidity. The child was conscious, heard and saw, but could not or would not talk. The eyes moved freely from right to left without strabismus, but with some left conjugate deviation. The respiratory rate was irregular, 15-36. The heart rate was irregular, 60-120. A neurological consultant reported, "The boy was seen to have two Jacksonian attacks beginning in the right arm or the right corner of the mouth and extending to the leg. There was weakness of the right arm and leg with loss of the right abdominal reflex and Babinski on the right. The other reflexes were equal or not easily obtained. The patient does not talk, but may understand a minor command."

November 4 the condition was much improved. The child talked for the first time, looked much brighter and was less ataxic. He counted accurately and protruded the tongue in midline with only slight tremor. The right hand was still ataxic and showed past pointing. His speech was a little indistinct. Only a few words were uttered, and these only after prompting. The right pupil was greater than the left. He had had since admission twenty to twenty-five Jacksonian convulsions, each followed by cough. There was no ankle clonus and no Babinski. The knee-jerks and the abdominal reflexes were present on both sides, less on the right. The cremasterics were present on both sides. The neck was still slightly stiff. There was no Brudzinski and no Kernig. A faint systolic was heard only after exercise; no diastolic. There were no more convulsions. The condition improved steadily. Next day the child uttered sentences. He still had paroxysms of coughing with redness of the face. The pulse was regular. All the reflexes and the strength of the right side was slowly returning.

It was now learned from the mother that the boy's sister had whooping cough, and upon further questioning it was found that the boy had had paroxysmal cough for the past month with cyanosis and vomiting; that he vomited after attacks of coughing as often as five times a day; that shortly after the onset he had slight fever now and then, but most of the time had been afebrile. He coughed most at night and upon excitement.

November 6 he was discharged to the South Department of the City Hospital.

DISCUSSION

BY FRITZ B. TALBOT, M.D.

The chances are that this early convulsion, if it took place in the spring months, was due to tetany.

At the time when he was sent home from school it might make one think that this cough was possibly the result of an endocarditis following the tonsillectomy which was evidently done to prevent the return of the articular rheumatism.

Can you tell me how long it was from the time he was sent back from school and went to bed?

MISS PAINTER: He went home a month before his reentry; two weeks he stayed in bed, then went back to school for a week, then was out a week, as I understand it. His mother gave different accounts of it.

DR. TALBOT: How long was it from the time when he was sent back from school and the time when he came to the hospital?

DR. ELLIOT H. LUTHER: As I remember it he was home about a week from school before admission to the hospital.

DR. TALBOT: He was sent home from school with a cough and commenced to vomit. Four days later he "did not speak, but answered questions by nodding his head." That is the first neurological symptom.

As has been said, the history was rather difficult to get in this case, and as will appear later we did not have all the facts when the child came in. Our problem at the time when he entered the hospital was to determine the cause of these convulsions, and of course we thought of all the different causes of convulsions. The examination of the spinal fluid ruled out all the different types of meningitis. One might take exception to that statement perhaps, in that very early in tuberculous meningitis sometimes there is no increased cell count for a few days. But eventually we get an increased cell count.

The blood pressure was rather high. That might be high because the child was having convulsions.

A cell count of four is normal.

In the discussion of this case I think that we can neglect the chemical findings as helping very little.

The important thing that we had to decide at this stage of the game was what was the cause of the convulsions. We considered meningitis. That was ruled out by the continued low cell count. Clinically the symptoms present might have been some form of meningitis. We also considered encephalitis, but as the disease progressed this could be ruled out. It came down to the possibility of there being a hemorrhage of the brain due to an embolus from a possible endocarditis. The early history of acute rheumatism was taken in favor of this opinion; but the heart murmurs could be either a valvular lesion or within normal limits. Embolus was a pure guess, but the data that we had at that time suggested this.

It is possible that the earlier Babinski was not obtained because the child was in convulsions.

What is "past-pointing?"

Dr. Henry R. Viets: When he moved his hand toward a fixed object he went past the object instead of touching it. It is often a symptom of cerebellar disease.

Dr. Talbot: When the real diagnosis of pertussis was made we had to send him over to the City Hospital.

There are one or two features of the history which on restrospect might have suggested that diagnosis to us. One is seen in the first paragraph, where it is said that a week before admission to the hospital he began to vomit three or four times a day, with paroxysms of coughing. A second factor that might have suggested this diagnosis was the differential count of the blood. I know of no other condition except lymphatic leukemia and infectious mononucleosis in which one might expect the differential count to change from a predominating polynuclear differential count to a predominating mononuclear differential count. Predomination of mononuclear cells appears frequently in whooping cough and is supposed to be diagnostic. Another feature that is perfectly consistent is the X-ray. This X-ray showed "moderate increase of the hilus density". A number of years ago such findings would have been confused with generalized tuberculosis. As a matter of fact, in looking at an X-ray plate of this sort it is almost impossible to differentiate the two diseases without more data. Neither plate is very good, but the shadows are a little bit wider and heavier than we might expect, although many people would pass this as within normal limits. I have however seen shadows larger than these in whooping cough when there was no tuberculosis.

Having the diagnosis made clear to us by the mother or grandmother—which is usually the case—the point of view of looking at these convulsions was quite different, and it became clear to us that the convulsions must have been secondary to the whooping cough, with small hemorrhages due to the coughing. The coughing, as is well known, is accompanied by increased pressure within the chest and consequently increased pressure in the skull. So that we believe that this was a case of hemorrhage due to the paroxysms of whooping cough. I might say that this is an unusual finding but not rare. There are reports of it in the literature, and it is spoken of among the complications in many of the textbooks.

Before leaving this part of the discussion: I spoke to the heart consultant to-day. He said that his opinion at the early examination, given before we had the full data, was a guess as to what might be and not based upon logical proof that it really was that. It was purely a guess on his part.

Dr. Viets: This case presented some unusual neurological findings, and was of great interest to us. I saw the case before the definite diagnosis of whooping cough was made. The patient showed at that time two sets of signs. There were signs of cortical irritation leading to Jacksonian epilepsy, and there were signs of spastic paralysis with the absence of speech, which we took to be aphasia, so commonly associated with right hemiplegia in right-handed individuals. Our diagnosis, then, from these findings, was a lesion in the left internal capsule or in the left cortical area. The etiology of such lesions in children is manifold. We thought at once that this might be the effect of a secondary embolus carried from the heart, on account of the history of acute rheumatic joints and possible endocarditis. That was our first diagnosis. We also thought of a brain abscess as a possibility, on account of the high leucocytosis. We did not find any signs of true increased intracranial pressure, however, an impression borne out by the normal spinal fluid pressures. The hydrodynamic tests on the spinal fluid were most valuable in ruling out not only meningitis but increased intracranial pressure such as might be consistent with a diagnosis of brain abscess. We thought therefore that he had an embolic lesion in the subcortical region.

It is unusual to have Jacksonian attacks from a lesion in the capsule itself. That leads to paralysis but not to irritation of the cortex. Therefore our feeling was finally that the lesion was not an isolated internal capsule lesion, such as one sees in apoplexy, but might probably be multiple hemorrhagic lesions in the subcortical area, this giving rise to the convulsive as well as the paralytic phenomena.

One rarely sees in children a hemorrhage from a single vessel leading to complete hemiplegia without an etiology of syphilis behind it. We should expect from severe coughing and increased intracranial pressure at the time that there might more probably be multiple petechial hemorrhages, which I should think it likely this boy had. The prognosis, of course, in multiple petechial hemorrhages is relatively good. It is the type of hemorrhage that we see in encephalitis, but very rarely do we see it from any such cause as this patient had. I should expect that he would recover entirely so far as the neurological aspect went.

An interesting point is that there was a hemiparesis with a questionable Babinski response on the same side and loss of the abdominal reflex. Absence of the abdominal reflex in an unconscious patient is a valuable sign of hemiplegia provided we get a good abdominal reflex on the other side.

Dr. Luther: I went through the literature in English on the subject and found about twelve cases of whooping cough complicated by hemiplegia. I have also got together a number of cases in which necropsies have been performed on such patients. Dr. Rhein* in 1905 collected twenty-one cases. So far as the site of the hemorrhage goes they were as follows:

Hemorrhage into the brain substance in	7 cases
" between the dura and skull in	2 cases
" into the meninges in	1 case
" into the substance of the brain and into the meninges in	2 cases
Capillary hemorrhages in	2 cases
Hyperemia alone in	4 cases

In three cases no pathology was demonstrable in the central nervous system.

In 1899 Schreiber** collected ten cases with necropsies, and from these concluded that the meninges were the site of preference.

Hockenjos† in 1900 in eleven necropsies found that in four the hemorrhage was in the meninges, in five in the white substance of the brain, in one in the cortex, and in one no hemorrhage was found.

Dr. Viets: We did not speak of the question of meningeal hemorrhage, but our lumbar puncture ruled that out.

A Physician: What is the hematocrit test?

Dr. Talbot: That is the proportion of the red cells to the total volume of blood. In this case it was normal. I suppose it was done because of the very high red count, six to seven million. I do not know how to explain that. It would be called a temporary polycythemia. It is possible that it was taken at the time of paroxysmal coughing.

DIAGNOSES OF CONSULTANTS

Neurologist November 2. Provisional diagnosis: Embolus. Infection of left internal capsule with possible formation of brain abscess. Right hemiparesis with aphasia.

Heart consultant November 2. Probably cerebral embolism, very likely rising from intracardiac thrombosis, intra-auricular if rheumatic mitral disease is the important factor behind it, and either intraventricular or intra-auricular if bacterial endocarditis is present. Bacterial endocarditis may have occurred following the tonsillectomy and cold, but there is not enough evidence for it to be diagnosed with certainty. If it is not present the prognosis is probably not hopeless. The fever and leucocytosis can be accounted for by the cerebral infarction. The heart seems surprisingly normal. However, some mitral disease is probably present (history, murmur).

DIAGNOSIS

Whooping cough complicated by left cerebral apoplexy and hemiplegia.

LATER NOTE

At a visit March 11, four months after discharge, no member of the family was to be found. Neighbors said that the boy was able to play out of doors. No limp had been noticed. He did not go to school. He was said not to have been feeling well recently.

CASE 12142

Surgical Department

A married Nova Scotian clerk thirty-eight years old entered the hospital for the first time November 8, four years before her final admission, complaining of weakness and debility. At twenty-two she had an operation, she believed gastro-enterostomy, for abdominal pain, with relief. Her catamenia were regular until she was married, at twenty-six. After her marriage her periods were always irregular, with profuse flowing. After the birth of one child she had a miscarriage. For nine years she had not lived with her husband.

Six years before admission she began to have attacks of sharp severe pain in the right lower quadrant which had occurred about once in six months. The attacks lasted twenty minutes and were followed by soreness which lasted two or three days. After the attacks she urinated a great deal for a few hours. She had radium treatment for fibroid at another hospital a year and eight months before admission. After one treatment her menstruation stopped for sixteen months. After the passage of bloody urine X-ray was negative for kidney stone. Uterine fibroids were found. Nine months before admission she had the last of these attacks. She then felt fairly well until five months before admission, when she began to have constipation and to pass much mucus. She lost her appetite, was nauseated, and felt dizzy. She made several visits to the Out-Patient Surgical, Medical and Nerve Rooms between July and November. Six months ago she had two or three stools a day and began to notice mucus in the stools. This had continued steadily, although for the past four months she had trained herself to have only one stool a day. Recently her stools had been soft, with much mucus. She had noticed no blood except once, a year before admission. The June before admission menstruation with scanty flow became reestablished, though she missed one period in August. Three months before admission she fainted two or three times. In September a vaginal examination showed a lacerated cervix and tenderness in both vaults, with irregular uterus. October 27 a gastro-intestinal X-ray was negative except for acute tenderness on palpation just at the tip of the cecum, suggestive of a pathological appendix, although pathology in the adjacent organs could not be ruled out. Examination of the stomach and duodenum showed no evidence of previous operation. A Wassermann was negative. She was treated in the Out-Patient Department for constipation with no relief. For three months she had had dull continuous ache in the right lower quadrant and had vomited several times a week, about twenty minutes after eating. For two months she had had dull headache coming on about eleven o'clock in the morning and lasting through the afternoon and evening. For the past month she had felt nauseated most of the time. She had a bad taste in her mouth, and was dizzy most of the time; she often awoke feeling dizzy, and had a constant numb feeling in the right leg. She had worked continuously up to her admission.

---

*J. H. W. Rhein, Jour. A. M. A., Vol. 44, page 697.

**Given by Rhein as Archiv f. Kinderheilk., 1899, p. 1.

†Jahrbuch f. Kinderheilk., 1900, 3 F I, p. 425.

Examination showed a fairly well nourished, slightly pale woman. The heart and lungs were normal. There was a median upper abdominal scar which was solid. There was slight tenderness in the right lower quadrant, not at all definite. Pelvic examination showed a good perineum. The cervix was not torn and was freely movable. The fundus was quite large, not tender, freely movable, in good position. The vaults were free. Rectal examination was negative and confirmed the pelvic examination.

The temperature and respiration were normal. The pulse was 50 to 97. The urine was normal in amount, specific gravity 1.010, a trace of albumin at one of two examinations. Two cathether specimens showed red blood corpuscles and leucocytes. The hemoglobin is not recorded. The leucocyte count was 14,000, polynuclears 82 per cent., reds 5,700,000. The stool was negative. The fasting contents of the stomach showed free HCl .056 per cent., total acid .087 per cent., guaiac negative. The test meal showed free HCl .04 per cent., total acid .019 per cent., guaiac negative.

Cystoscopy: Urethra tight to number 25 French sound. Cystoscope passed easily following dilatation. Bladder mucous membrane slightly reddened and injected at the base. Above the right ureter was a round smooth projecting knob extending well into the bladder. Left surface covered with mucous membrane which had apparently been thinned by stretching. No ulceration. The ureteric ridge was drawn to the right and elevated toward the projection. Ureteral orifice normal and placed well up on crest of ridge. Beyond the ridge and the projection was a rather deep recess in the bladder wall. A wax tipped catheter passed readily to each kidney. The tip was not scratched. There was normal flow from each side. Left urine slightly hazy. Function from left kidney 5 per cent. in seven minutes. The urine showed occasional leucocytes, 10 red blood corpuscles, many epithelial cells. Function from right kidney 17 per cent. in six minutes; many red cells, a moderate number of epithelial cells. Cultures from both urines negative. A pyelogram showed that the catheters penetrated into the pelves. The course of the right ureter was somewhat abnormal, passing to the left as far as the median line at the level of the tip of the sacrum, then to the pelves in normal position. There were no sharp deviations or evidences of kinks. The injected pelves of both kidneys were normal in appearance. There were no shadows in the kidney areas or along the course of the ureters which suggested stone. A genito-urinary consultant reported, "Pus probably due to an old pyelitis. Nothing active in the kidneys now. Apparently low function in left kidney, maybe from previous infection or may be error in our cystoscopy technique. The deformity of the bladder described in the cystoscopy report and the course of the ureter as seen by X-ray suggest pressure from outside at the sacroiliac joint region."

The anomaly of the ureter was considered congenital and unimportant, because the abdomen was so easily palpated that any tumor which could have caused this would have been very definite. It was believed that exercise and rest were all she needed. November 21 she was discharged to a convalescent home.

October 14, eleven months later, she reentered complaining of pain and discomfort in the pelvic region with definite attacks of pain eighteen months and eight months before the readmission and at present. Her bowels were constipated. She passed a considerable amount of mucus by rectum.

Examination showed a round mass about three inches in diameter in the right lower quadrant, with a smaller one in the left lower quadrant in the region of the uterus, possibly attached to the uterus. There was tenderness on palpation. Pelvic examination showed the cervix normal, a mass in the right vault attached to the uterus, tender on palpation, and a smaller mass in the left vault. There was considerable bleeding. Her last menstrual period was two weeks before admission.

Before operation the chart was normal. The urine was cloudy, specific gravity 1.022, a trace of albumin, clumps of pus cells. The blood is not recorded.

October 17 operation was done. She made a good recovery from ether. The temperature and pulse rose steadily, and cough with thick greenish sputum developed. October 20 the right lung showed consolidation at the angle of the scapula and the following day the left lung showed it in the same area. After the 19th the chart fell. A medical consultant believed there was little if any fluid. The lung condition improved very slowly. The wound showed a small hematoma. November 7 X-ray showed that the apices lighted up fairly well. Both diaphragms were high, particularly the left, which was irregular and moved very little with respiration. The right diaphragm was regular and moved rather poorly. There was nothing definitely pathological in the lung fields. At the root there were a few dense apparently calcified glands. The high diaphragm on the left was thought probably due to a large amount of gas in the splenic flexure and the stomach. At the time of her discharge, November 11, she had improved very much and felt entirely well. The wound was clean.

After leaving the hospital she felt somewhat improved but not well. January 16, two years and two months later, she came to the Out-Patient Department complaining of backache and general debility. She had frequent sore throats. Several bad teeth were removed at that time, and the following April she had her tonsils and adenoids removed. February 10, ten months later, she complained of nausea of fourteen years' duration, epigastric distress, foul urine, headache, crying spells, yellow vision, etc. A diagnosis of psychoneurosis and ptosis was made. After treatment with electricity in the Nerve Department and a supporting abdominal belt in the Orthopedic Department she was still troubled with nausea, but had no vomiting or rumbling of the intestines. X-rays in April showed nothing but a large atonic stomach. She said that she once passed considerable blood with a bowel movement. She still complained of nervousness, faintness, headache, and a general rundown feeling which had been with her for years. The diagnosis was visceroptosis, adhesions, and neurosis. In April, three months before her third admission, she passed about a teaspoonful of bright red blood on several occasions. A week before her third admission, July 21, her urine was very dark and bloody. In the middle of every afternoon she felt nauseated and distended. She noticed at this time a lump in her abdomen which had been there for eight years. She passed much gas by mouth and by rectum. During the two weeks before her readmission she was so constipated that laxatives had no effect. She was very subject to fits of crying, and worried a great deal. Five days before readmission she was obliged to give up work.

Upon examination she was well nourished, slightly sallow. The teeth showed considerable dentistry. The left breast in the upper and outer quadrant contained a few small pea-sized nodules. The abdomen showed median scars in the upper and lower portions with tenderness along the lower scar and separation of the recti muscles. Upon pelvic examinations the cervical stump was felt. The right vault was free. The left vault contained a tumor mass, cystic feeling, the size of a lemon.

Before operation the chart was not remarkable, the urine and blood were not recorded.

July 24 operation was done. Next day the patient was very emotional. She made good improvement, but complained of gas pains until the 27th. August 1 she complained of severe lower abdominal pain and vomited several times. The abdomen was soft. There was good result from an enema. The pain was almost entirely relieved by ten grains of sodium bicarbonate and a hypodermic of sterile water. Next day there was a little abdominal distension and she was still vomiting. August 3 the temperature and pulse started to rise, reaching 100° and 120 respectively the following day. The abdomen was more distended than before, with great tenderness on the right. No peristalsis was heard. Enemas gave good gas and fecal results.

That afternoon a second operation was done. She made a good ether recovery. The pulse was rapid and thread-like. August 5 transfusion was done. She was surprisingly well after it, but lost ground. The pulse was poor. She was much jaundiced. August 6 she died.

Discussion

BY EDWARD L. YOUNG, JR., M.D.

I have often wondered whether it would not be a good idea to give every patient operated on a card stating in accurate terms what had been done to him, so that if he went to another part of the country and another surgeon this information could be had.

Dr. Daniel F. Jones: In this connection it may be interesting to mention that when I wrote to a surgeon recently asking for this information in regard to a patient of mine, he wrote me a very indignant letter in regard to it, saying that it was a very irregular course to pursue. When I wrote him again he said that in his part of the country it was not customary for patients to trot off to other surgeons until they had told the first surgeon they were going, and until they had paid their bill!

Dr. Young: The irregularity of the periods, and the miscarriage suggest that there may have been a pelvic infection either following marriage or following the birth of the first child.

A report by a female patient of bloody urine should always be checked up pretty carefully, because it may be due to vaginal bleeding not recognized by the patient, especially if there are no other symptoms pointing to the urinary tract. It should be viewed with suspicion until the cause is found. Here fibroids were found as the possible cause of the bleeding.

This patient was spread around to three different departments including the Nerve Room. That mere statement means that there were a great many things that they did not find specific about her. I think one point we can always start on with patients with this variegated history is that the more different things a patient has, for instance, the less likely is there to be a single organic lesion which is the background. But when a patient comes in and always has the same pain in the same place in the abdomen, and we cannot shake her no matter how neurasthenic she may seem, that one symptom should be taken seriously. It seems here that there were a great many things, and it may be that there are different things present such as a small fibroid, pelvic sepsis, and mucous colitis, and yet no one serious thing seems to have been presenting.

The fact that she had worked up to the time of admission, that she was well nourished and that examination showed nothing definite backs up our feeling that to date the thing is a combination of functional plus minor physical lesions.

The finding, in two catheter specimens, of red corpuscles and leucocytes I think should justify further examination, particularly with the story that we are given of frequency of urination following an attack of pain in the right lower quadrant.

There is a marked difference in kidney function, assuming equal flow through two catheters of the same caliber.

It is also true that a fibroid in the anterior wall of the cervix or low fundus may be missed on pelvic examination, and may show on subsequent examination just as this does. Otherwise it seems to me that cystoscopy does not show anything of importance. Her symptoms have been mostly right, and the only possible thing here is the pus from the left kidney and the lowered function, because as reported the course of that ureter does not show obstruction. Had there been intermittent hydronephrosis by this time the pelvis would have shown some change.

The irritative colitis is the one thing that is persisting more than any other symptom. The description here does not allow us to say whether these are fibroids or whether that is a pus tube. In the presence of symptoms pointing to the pelvis and a mass on that side of the uterus, of course the only treatment is operation, and the diagnosis it seems to me rests between fibroids and pus tubes, and as I see the story it is more likely to be pus tubes although a fibroid may be present and missed and consequently developed. Of course a chronic infection would not necessarily give evidence on the chart in temperature or pulse at all.

Dr. Jones: What about double cystic ovaries?

Dr. Young: Do you think they would have developed in eleven months?

Dr. Jones: What decides you that they did?

Dr. Young: Eleven months before examination was made.

Dr. Jones: They might have been there.

Dr. Young: Yes, perfectly well. I do not see how it is possible to make a differential between the three.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Chronic salpingitis?
Fibroids?

PRE-OPERATIVE DIAGNOSIS OCTOBER 17

Chronic salpingitis.
Fibroids of uterus.

FIRST OPERATION

Gas-ether. Median incision with retraction of the left rectus. The uterus was found to be large, almost the width of the pelvis. There was a fibroid about three-quarters of an inch in diameter on the anterior surface. Posteriorly the tubes were adherent to the pelvis and there were some adhesions between the posterior wall of the uterus and the pelvis. The broad ligaments and uterine arteries were tied off with chromic catgut and the cervical canal was reamed out of the cervix, removing the entire cervical mucosa. The cervical canal was then closed with chromic catgut sutures. The round ligaments were sutured to the stump with chromic catgut. The peritoneum was sutured over the whole area. Both tubes were removed, also the right ovary. The left ovary was normal in every way. The appendix was 2½ inches in length, moderately thickened throughout. There were no adhesions. The appendix was removed. The omentum was adherent over the whole length of the epigastric wound. The stomach as far as could be made out was normal. The gall-bladder was normal in appearance and to touch, but there was one gall-stone felt in it. It was decided not to do a cholecystectomy at this time. The wound was closed without drainage with chromic catgut and silkworm gut sutures.

PATHOLOGICAL REPORT OCTOBER 17

A uterus symmetrically enlarged to the size of a baseball, amputated through the cervix, with both Fallopian tubes and one ovary attached. Its peritoneal surface is rough and red. Its walls are 3 cm. thick and fibrous. There are several small fibrous tumors one of which is the size of a cherry and lies under the peritoneum at the fundus. The endometrium is smooth. The adnexa show nothing noteworthy.

Microscopic examination of the uterus shows areas of small round cell infiltration in its walls.

The appendix is 5 cm. long and fibrous.

Multiple fibromyomas.
Chronic appendicitis.

FURTHER DISCUSSION

Your mind worked as mine did for the preoperative diagnosis.

I do not see that this fits the pelvic examination at all.

Was that blood passed by rectum, in the April before her third admission? She well might have some bleeding from the rectum from colitis, of course. Or it may have been from the urinary tract.

Miss Painter: There is no record as to where the blood came from.

Dr. Young: Apparently it was not taken very seriously, because they have not made a urine record before operation. She came in three days before operation, so that a complete study must have been done.

The left ovary was normal at the time of the first operation and was left behind. This examination suggests that the ovary has now changed and is cystic.

On the story as we are given it here the only definite thing is what I assume to be a cystic ovary on the left side, because nothing further is said about the blood, and no further symptoms are spoken of. So that I assume that this operation was done for cystic ovary. Now of course it is true that we can go into an abdomen a good many times and not get into trouble with bothersome adhesions, but the more often the abdomen is opened and irritated the more chance there is of trouble. The whole question here is whether or not to touch this woman. I think that with the story we are given of her neurotic condition one might perhaps hesitate to go in and operate on this cystic ovary at the present time. Dr. Jones, what do you think about that? Do you think that cystic ovary is the cause of any great amount of her symptoms?

Dr. Jones: In the first place I think she has been operated twice too many times already. In the second place, this is a soft cystic mass. It might possibly be a piece of adherent intestine. In the third place it is not at all likely that the removal of this mass will relieve the patient in any way, as nothing that has ever been done has ever relieved her up to the present time. Therefore it would seem rather useless to operate because if the patient feels that she is no better we might just as well leave her without operation as operate.

Dr. Young: On the backward look I think we should say that she should have been let alone.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Cystic ovary, left.

PRELIMINARY DIAGNOSIS JULY 24

Low-grade obstruction.

SECOND OPERATION

Gas-ether. Upon opening the abdomen there were no adhesions about the lower scar, but there were a few adhesions running from the omentum to the upper scar. No hernia was found, and no obstruction to any part of the intestines. A few adhesions were separated.

FURTHER DISCUSSION

They are not considering cystic ovary at all. On what do they base low-grade obstruction? Apparently they got a very different picture of this patient than we get on reading the history. As I read this over I certainly do not get a picture of a low-grade obstruction. They do not mention the ovary at all, or that mass.

"Enemas gave good gas and fecal results." That is very interesting in view of your discussion of another case.

Dr. Jones: I think that statement must have been put in some days later, because it seems to me very doubtful if enemas could give good gas and fecal results and in addition have the statement that the patient was much more distended. I do not think we ought to let a statement go out in the records like this, because it may do a great deal of harm. Even though it is in the record I would not believe it. If the woman had intestinal obstruction, as I understand she had, I think that is a very unfortunate statement to go out. I hate to question the records; but a woman cannot become distended and have good gas and fecal results and die of intestinal obstruction.

Dr. Young: I think one can get fecal material from an enema.

Miss Painter: It was given with some detail. "Good gas result from enema at eight a. m. and fecal result from enema at one p. m."

Dr. Young: One other statement I was going to emphasize. Dr. Jones has said that when the stage comes where there is no sound, the stage of paralysis, we have got to a very dangerous stage, and the diagnosis here as we get it is post-operative intestinal obstruction. It has been going on three days, and that is pretty late in the game.

Dr. F. T. Lord: Do you know about the white count here?

Miss Painter: On August 3 the leucocytes were 23,000.

Dr. Lord: That would suggest strangulation with vascular changes and not uncomplicated constriction of the bowel.

Dr. Jones: I should say that it suggests that. That is as far as I would go.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Intestinal obstruction.

PRE-OPERATIVE DIAGNOSIS AUGUST 4

Intestinal obstruction.

THIRD OPERATION

Ether. Right rectus muscle splitting incision. The abdomen was found to be full of old blood having a colon bacillus odor. After careful exploration it was found that there was a loop of gangrenous bowel which proved to be the terminal twelve inches of the ileum, entirely necrotic. It was resected and brought to the abdominal wall. Two Mixter tubes were placed in. The wound was hastily closed.

PATHOLOGICAL REPORT

Two short segments of intestine whose walls and surfaces are purplish red and necrotic.
Infarction.

BACTERIOLOGICAL REPORT

Culture from the peritoneal cavity showed a profuse growth of colon-like bacilli and pneumococci.

Further Discussion

Dr. Young: This does not say whether the loop was gangrenous, whether it was volvulus?

Miss Painter: The house officer's report states that it was apparently twisted.

Dr. Young: Her jaundice suggests a septicemia. Knowing there was a gall-stone I suppose we might have had jaundice from obstruction at that late date.

It seems to me, Dr. Jones, that you could point a moral and adorn a tale with this case.

Dr. Jones: It is an extraordinarily valuable case to show what should not be done.

Dr. Young: I do not know who said it years and years ago—I think very likely it was you—it has stuck in my mind, that is, that if symptoms are spread all over the patient's anatomy the best place for that patient is in the office of your dearest enemy. But if there is always one symptom which is always in the same place, that symptom should be taken seriously, however neurotic that patient may be.

Dr. Jones: I have thought it many times, if I did not say it.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute and chronic intestinal obstruction.
Exploration for adhesions.
Resection of gangrenous bowel.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Intestinal obstruction.
Septicemia.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

(Hysterectomy for multiple fibromyomas.)
(Infarction of ileum.)

2. *Secondary or terminal lesions*

Resection of small intestine.
General peritonitis.
Icterus.
Cholelithiasis.
Edema of the lungs.

3. *Historical landmarks*

Scars of old operation wounds.
Slight chronic pleuritis, left.

Dr. Richardson: There was general peritonitis and icterus. In the gall-bladder there were two small stones. The ducts were free. The pancreas was all right. There was nothing in any of the organs, a good enough heart, some edema of the lungs, the kidneys all right, and in the region of the left ovary I found a fibrocystic mass. The other portions of the adnexa of the uterus were wanting and all that was left of the uterus was a stump.

In the peritoneal cavity at the time of necropsy there were no definite adhesions that I could find, a few about the stump, but it was singulary clear. There was, of course, a strip of intestine wanting and the two ends were brought up into the wound. So I don't know about what adhesions may have been in that neighborhood, and the pathological account does not state, but in the operations they did see some adhesions, didn't they?

Dr. Young: At the second operation there were some trivial adhesions between the omentum and the upper scar.

Dr. Richardson: At the time of necropsy there were no adhesions binding the intestines at all. The small intestine was distended and contained a lot of opaque material. The large intestine was rather small. The mucosa of each was negative.

The aorta and vascular apparatus were all right, nothing in the superior mesenteric vessels, and nothing in the portal vein or its radicles.

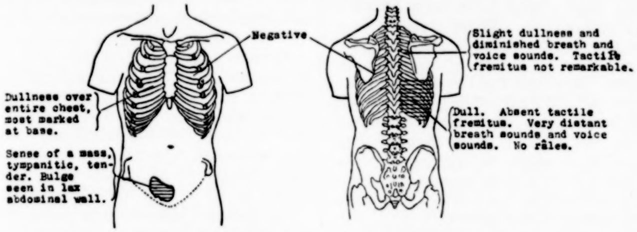
Dr. Young: According to the house officer it was a twist. They saw adhesions at that point and there was apparently a volvulus.

CASE 12143

Surgical Department

A man of sixty was seen in the Emergency Ward at eleven o'clock on the night of December 2. He came in complaining of abdominal pain of about six hours' duration with nausea and vomiting of two hours' duration. The pain was cramp-like in character, most of the time in the upper abdomen, although at times felt generally throughout the entire abdomen. There was also some steady aching, so that the patient was not entirely free from pain at any time. His bowels had been regular. He had had no previous attacks similar to this one.

He had been in this hospital in April, three years ago. At that time he was operated upon. His gall bladder was explored and found normal, and his appendix was removed. Following the operation he was relieved of the symptoms for which he had been operated. From that time until about six months ago he had been very well and continued to do his work as a carpenter. At that time he fell, injuring his penis and testicles. That evening his penis was swollen and painful. Also there was some burning and difficulty in starting the stream. These symptoms disappeared three days later. Two months ago there was a recurrence of his urinary symptoms. These had continued up to the present time.


Negative
Dullness over entire chest, most marked at base.
Sense of a mass, tympanitic, tender. Bulge seen in lax abdominal wall.
Slight dullness and diminished breath and voice sounds. Tactile fremitus not remarkable.
Dull. Absent tactile fremitus. Very distant breath sounds and voice sounds. No râles.

The patient had both gonorrhea and a chancre at the age of twenty-four. His Wassermann at previous admissions to the hospital was negative. The remainder of his history was of no consequence except that just before his admission December 2 he had recovered from an upper respiratory infection which he had had for the past three weeks and which had left him quite weak.

While in the Emergency Ward and while the history was being taken he had several attacks of pain each lasting about one minute. His brow was wrinkled and he held his hands on his abdomen, complaining of very severe pain. He vomited twice, about six ounces at a time, the vomitus apparently being stomach contents.

Examination showed a rather thin man with dry, loose skin. Breath was foul. Chest expansion was greater on the left. The other lung signs were as shown in the diagram. Heart was normal. Radials were easily palpable. Abdomen was soft, flat, and tympanitic. In the right upper abdomen there was a scar of a previous operation; it was well healed and solid; no evidence of hernia. At the brim of the pelvis on the right there was some but not marked tenderness. There was no increased peristalsis to be made out with the stethoscope. There were no masses to be felt. Both testicles were atrophic. Temperature was 96.7 by mouth. Pulse and respiration were normal. White count was 23,800. During the examination the patient was comfortable. The reflexes were all hyperactive. There was a slight unsustained clonus of both feet. The rectal examination showed the prostate moderately enlarged and firm. There was no definite tenderness to be made out by rectum.

The following morning he was given a barium enema without the usual barium preparation. The enema passed without delay to the cecum, and failed to show any definite pathology. As there was fecal material constantly in the bowel, it was thought that examination should be repeated after better preparation. There was extreme tenderness over the whole abdomen and it was impossible to palpate any of the portions of the colon.

A little later in the morning a definite soft resistant tympanitic and tender mass, somewhat irregular in outline, could be felt and seen extending from the suprapubic region towards the right iliac fossa. It could be moved slightly and was constant in position.

During the day the abdomen gradually became distended so that by evening there was dullness along the left side and the entire abdomen below the umbilicus was moderately distended. The patient felt nauseated and vomited twice during the day, the vomitus being largely water taken by mouth and some mucus; he had taken very little by mouth.

In the evening he was given 1000 c.c. normal saline subcutaneously. The distension of the lower abdomen with the fullness in the suprapubic region suggested somewhat the appearance of a distended bladder. An attempt was made to catheterize the patient fifteen minutes after he had passed five ounces of cloudy urine. About 4 cm. from the cut-off muscle a definite stricture was met through which a filiform bougie was passed after some difficulty. A No. 14 French follower was then passed, but was very snug. There was a residual of two ounces. The urine was loaded with fine granular casts and showed occasional leucocytes. The patient's temperature had varied from 96.7° to 98°; pulse and respiration remained normal. The white count had increased to 38,000.

The patient was then sent to the operating room and an operation was performed about twenty-four hours from the time of his admission to the hospital. The next morning his condition was good. He complained of no pain and looked better than might have been expected. He had a slight cough. There was, however, definitely more abdominal tenderness than normal. He was having plenty of morphia and sips of water. His non-protein nitrogen was 48 milligrams per 100 c.c. The following day he did not respond at all. The respirations were labored. There were râles in both lungs posteriorly. The abdomen was rigid. The non-protein nitrogen was 101 milligrams, the blood chlorides 566 milligrams per 100 c.c. of plasma. That day, December 5, he died.

Discussion

BY LELAND S. MC KITTRICK, M.D.

A most important observation is missing. That is, the house officer who saw him in his attack of pain in the emergency ward did not note the location of his pain. The record does not say whether it was in the upper or in the lower abdomen. The location of the pain as well as the character of it in an acute surgical emergency is of tremendous importance. There are only a few things we have to get in a surgical history. It does not have to be long, but concrete and definite: in the first place, the character of the pain; is it steady or colicky? Steady pain usually means an inflammatory condition. Colicky pain is more apt to be peristaltic. Secondly, the location, whether in the upper or lower abdomen, may make a difference in our final conclusions.

There is one point that I think should be brought out, and that is that certain inflammatory conditions, such as an acute appendix, if in with the small intestine, may give colicky pain. That is, we can have colicky pain, not obstructive in origin, with an acute appendix but it is because the appendix is in with the small intestine. Do you agree to that?

Dr. Daniel F. Jones: Yes. The colic is not a severe colic.

Dr. McKittrick: Also it is very difficult for a patient to remember the location of a peristaltic pain. Peristaltic pain differs from inflammatory pain in that the former is usually general and over a given portion of the abdomen, whereas the latter can usually be localized in one particular area. As a rule a patient with peristaltic pain localizes that pain by moving his hand back and forth across the lower abdomen or the upper abdomen, whatever the case may be. It is rare that he can put his finger on it as a patient so frequently can with acute appendicitis.

Vomiting is of course of importance. In an acute surgical condition of the abdomen, particularly where there is a question of intestinal obstruction, it is very dangerous to wait until the character of the vomitus corresponds to that usually associated with intestinal obstruction. Vomiting may come early, it may or may not be fecal in character, or there may not even be any.

Here is a man with a definite colicky upper abdominal pain, with a normal temperature, without any sign of an inflammatory condition in his abdomen, but with a white count of 23,800. And apropos of all that has been said this afternoon I think we have to consider the latter suggestive of interference with the blood supply of an intra-abdominal viscus.

Dr. Jones: How do you account for the fact that this man had no peristalsis to be heard?

Dr. McKittrick: I should say that during the time he was examined he had no pain, therefore no increased peristalsis. He was not sick enough for the intestines to be paralyzed.

Dr. Jones: I think he must have been examined between the peristaltic waves.

Dr. McKittrick: The report of the barium enema fits in with the rest of the history in that it does not show any pathology in the large intestine. The mass felt later logically to fit in with the rest of the history should be a loop of intestine. That is the only mass I think of that could come up in that location.

I think the main point about the possibly distended bladder is that we do see epigastric distress with a lot of vomiting from renal insufficiency, but I do not think this can be considered here because he has had a definite attack of acute pain.

Certainly there are very few surgical abdominal conditions which give a 38,000 white count. In the absence of any temperature and any signs of inflammatory abdomen, there are few conditions except a mesenteric thrombosis which would give that white count. Also this patient had had an upper abdominal incision, and in what intestinal obstruction cases I have seen this is relatively rare. Is that your experience?

They are much more frequently seen after lower abdominal operations?

Dr. Jones: Upper abdominal operations cause post-operative obstruction much less often than those in the lower abdomen.

Dr. McKittrick: Another thing is, he had been perfectly free from symptoms until this present attack. A patient who has been previously operated upon, who has been well since the operation, and who comes to the hospital because of colicky upper abdominal pain associated with vomiting, without any evidence of an inflammatory process in his abdomen, should have an acute small intestinal obstruction. An intestinal obstruction with an initial white count of 23,800, later increasing to 38,000, should mean a thrombosis of some of the mesenteric vessels and consequently a loop of gangrenous intestine. The mass in the right lower quadrant which developed under observation should be a loop of distended bowel and should fix the right lower quadrant of the abdomen as the location of the obstruction.

Operation you will note was done twenty-four hours after he came into the hospital.

PRE-OPERATIVE DIAGNOSIS

Intestinal obstruction.

OPERATION

Under novocain ethylene anesthesia a para median incision was made. On opening the peritoneal cavity there was a large amount of free bloody fluid with a loop of distended gangrenous bowel adherent to the brim of the pelvis. Ether was then administered. The constricting band was cut and a loop of bowel about eighteen inches in length and gangrenous was delivered from the abdomen. The gangrenous bowel with a small margin of normal bowel was then cut between clamps and the portion of bowel involved, representing the terminal ileum, was cut, so that the remaining stump of small bowel was only about an inch and a half in length. The ends were then closed and a lateral anastomosis made between the small intestine and the cecum. This was necessary because of the short end of the terminal ileum. The anastomosis was somewhat difficult because of the fixed cecum. The abdomen was closed without drainage.

PATHOLOGICAL REPORT

A section of small intestine 19 cm. long with a portion of the thickened mesentery. It has a brownish-black surface and is covered with fibrin. The mucous surface is smooth and purplish red.

Infarction.

FURTHER DISCUSSION

Ether was administered apparently to get more relaxation than was possible otherwise.

Here again it has been a single band which has caused the trouble.

I think very likely some of his post-operative abdominal tenderness was masked by the morphia that he was having. He was evidently having pretty heavy doses. The increasing abdominal tenderness with rigidity in an intestinal resection for gangrenous bowel makes a general peritonitis the probable cause of death.

Dr. Lord's case (Case 12121, March 25, 1926) went six days; this patient twenty-four hours. Probably if he had been operated upon the night he came in, that is six hours after the onset of the pain, the outcome might have been different.

This case certainly answers the question Dr. Richardson asked about the relation between the time of onset and the time of operating. The time which elapses between the onset of symptoms and the time of operation is of secondary importance in the prognosis. The factors which are of prime importance are the location of the obstruction, whether in the upper or lower small intestine, and the condition of the constricted bowel, that is, whether gangrene is present or not.

I think it also stresses a point Dr. Jones made. If the man had not had pretty severe abdominal pain he would not have come in to the Emergency Ward at that hour of night, and with the white count and the type of his pain, and of course with the ultimate result, it bears out what all of us have been brought up to believe: that we can never operate upon a case of small intestine obstruction too soon, and we can let them go too long.

Dr. Young: If you did it over again would you just have brought the two ends of the bowel out?

Dr. McKittrick: You could not, according to this. The cecum was fixed and the distal loop of the ileum was too short. We could have brought the proximal end out.

DIAGNOSIS

Acute intestinal obstruction, infarction.
Acute general peritonitis.
Hypostatic pneumonia.

THE BOSTON
Medical and Surgical Journal
Established in 1828

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

For three years William H. Robey, Jr., M.D.
Roger I. Lee, M.D.
Robert B. Osgood, M.D.
For two years John W. Bartol, M.D.
Horace D. Arnold, M.D.
Channing Frothingham, M.D.
For one year Homer Gage, M.D., *Chairman*
Edward C. Streeter, M.D.
Edward W. Taylor, M.D.

Editorial Staff

David L. Edsall, M.D.
Walter B. Cannon, M.D.
Reid Hunt, M.D.
Francis W. Peabody, M.D.
John P. Sutherland, M.D.
S. Burt Wolbach, M.D.
George R. Minot, M.D.
Frank H. Lahey, M.D.
Stephen Rushmore, M.D.

Walter P. Bowers, M.D., *Managing Editor*

Associate Editors

George G. Smith, M.D.
William B. Breed, M.D.
Joseph Garland, M.D.

Subscription Terms: *$6.00 per year in advance, postage paid for the United States, $7.56 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 126 Massachusetts Ave.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

INSULIN IN MALNUTRITION OF INFANCY

The interest of pediatricians has been attracted in recent years to the use of insulin as an aid to the sugar metabolism of malnourished infants. R. L. Pitfield (*New York M. J.* 118: 217 Aug. 18, 1923) did the first reported work along this line, giving minute injections of insulin to two infants, aged 4 and 5 months, with every bottle. Gains in weight and general condition were reported. Later W. McK. Marriott (*J. A. M. A.* 83: 600 Aug. 23, 1924) used injections of a glucose solution to which insulin had been added, with resultant gains in weight. O. Barbour (*Arch. Pediat.* 41: 707 Oct. 1924) reported beneficial results with subcutaneous injections of 3 units 3 times daily to children under 2 years of age, and 5 units to children over 2 years of age. Administration was continued until a reaction occurred consisting of a sudden rise of temperature, anorexia, nausea and vomiting. Tisdall, F. F. et al. (*Am. J. Dis. Child.* 30: 10 Aug. 1925) concluded that no positive evidence had been obtained that insulin produced any beneficial result.

Louis Fischer and Julian L. Rogartz (*Am. J. Dis. Child.* 31: 3 March 1926) list as follows the ways in which insulin may be administered:

1. In combination with a solution of glucose.

(a) Intravenous or intrasinus injections of from 1/3 to 1/2 ounce (from 9 to 14 gm.) of 20 per cent. glucose per pound of body weight, to which have been added 15 units of insulin per hundred c.c. of solution (Marriott).

(b) Intraperitoneal injections of from 2 to 3 ounces (from 56 to 85 gm.) of 20 per cent. glucose solution, containing from 10 to 15 units of insulin.

(c) Subcutaneous injections of from 2 to 3 ounces of a 15 per cent. glucose solution with 10 units of insulin by hypodermoclysis.

2. In conjunction with feedings.

(a) From 1 to 3 units subcutaneously twice to 3 times daily, 20 minutes before meals until some reaction is evident.

(b) From 1 to 3 units intracutaneously, once daily, on the basis of work done by E. F. Müller, who explained that insulin thus given works at once by stimulating the liver glycogen forming function, through nerve stimuli passing over the parasympathetic nerve routes. Insulin administered intracutaneously is more slowly absorbed than by other routes, which accounts for a prolonged action of the dose, when injected into the skin.

Three types of cases were considered in their indications for the use of the drug, the method being chosen to suit the individual need.

1. A state of atrophy with acute intoxication in which life was in danger and an immediate effect urgent. In these cases Marriott's method was chosen, the 20 per cent. solution of glucose being injected into the longitudinal sinus. Four out of five patients were treated successfully.
2. Cases of atrophy in which decomposition and acute intoxication had not yet set in. Intraperitoneal or subcutaneous injection of insulin and glucose were given to these cases.
3. Dystrophic babies with a stationary or fluctuating weight. Improvement was shown in numbers of these patients when insulin was given subcutaneously or intracutaneously with the unchanged formula. Insulin is believed by these authors to be an effective though not absolute remedy in properly chosen cases of malnutrition.

THE SHEPARD TOWNER ACT

As the time approaches for action with respect to the continuance of this law, there seems to be more publicity setting forth the work done in those states which have accepted the provisions set forth in the text of this act.

The *American Medical Association Journal* has come out squarely in opposition to continuance of the policy in force. Massachusetts has not accepted the act and we are convinced that the attitude of this state will not change.

If we feel that it is an injustice to tax one state for the purpose of spending money in another state for educational purposes, it is none too early to make our position known in Congress.

The President of the United States is not in favor of this law and his position is endorsed by a very large number of eminent persons.

The knowledge of preventive medicine, maternal and child hygiene is available for all and no state is so poor that it needs to depend on revenue derived from taxation of other states to enable it to function. If a state fails to meet its obligations in public health matters, the reason must be that the inclination is lacking, and when the people are roused from their lethargy and discard the paternalistic yoke it will be found that they can walk without federal crutches.

ANONYMOUS COMMUNICATIONS

From other publishers and through our own observation we learn that a considerable number of persons expect that unsigned communications will be given space in papers and journals. Such people expect that transference of anonymous beliefs or conclusion to editors will be useful in dealing with objectionable individuals and important questions before the public.

The Board of Registration in Medicine is one of the grave-yards for epistles of this character. Someone may have suspicion of a doctor's work or standing and forthwith a letter or warning or accusation is sent. Unsigned criticisms of authors of articles or editors of publications undoubtedly serve to relieve the tension of a disturbed mind but epistles of this sort have about as much weight as a snow-flake and the recollection of them is blotted out about as soon as snow melts in warm sunshine.

If our unknown critics, sympathizers or even sincere reformers knew of the little attention given to these epistles there would be less use of these communications. People who attempt by such means to discredit some person should know that the recipient has little, if any, more respect for the writer than for an alleged wrong doer, although the writer would like to convey the impression that his activity is prompted by a high sense of duty. Courage is universally respected. The writer of anonymous letters is regarded as mentally unbalanced or timid.

These few words may help someone to establish a more normal state of mind and come out into the open.

ANNUAL DUES AND THE PROPER USE OF REVENUE

Members of medical societies as a rule cheerfully pay membership dues so long as there is reason for the amount fixed. Occasionally one hears the suggestion that a reduction would be agreeable.

The rate varies among state societies from five to twenty-five dollars and, in addition, in some instances district societies make an additional charge. But even so, the medical societies make modest demands of members as compared with one chiropractic organization which, according to the *Illinois Medical Journal,* has fixed the annual membership fee at one hundred and twenty dollars: A fund amounting to one hundred and fifty thousand dollars has been accumulated by this group. The *Illinois Journal* states that this large sum is to be used in promoting the interests of the chiropractic society before the legislature.

Fortunately physicians believe in logic rather than the expenditure of money when presenting views before the people. Chiropractors evidently believe that money talks louder than arguments based on scientific facts or sound reasoning.

We believe that the influence of money as applied to important matters of public well-being is ephemeral as compared with the compelling force of education. We have faith to believe that the people will not be fooled forever.

RULES GOVERNING MEMBERSHIP IN THE MASSACHUSETTS MEDICAL SOCIETY

To avoid confusion as to membership in the Massachusetts Medical Society please read the notice to Fellows published on page 7 of the Directory compiled by the Secretary. The directory has been sent to every member of the Society. The rules are very simple but have escaped the attention of some members and a few officers of District Societies.

THIS WEEK'S ISSUE

Contains articles by the following named authors:

Painter, Charles F., A.B.; F.A.C.S.; M.D. Harvard Medical School 1895; Professor of the History of Medicine, Tufts College Medical School; Associate in the Graduate Department of Orthopedics at the Harvard Medical School. His address is 520 Commonwealth Avenue, Boston. His subject is "The Origin and Spread of the Sacro-Iliac Idea and Its Menace," page 613.

Monroe, Robert T., A.B.; M.D. University of Michigan 1924; Assistant Resident Physician, Peter Bent Brigham Hospital. His address is Peter Bent Brigham Hospital. Associated with him is

Emery, Edward S., Jr., M.D. Harvard Medical School 1920. His address is 520 Commonwealth Avenue, Boston. The subject of their paper is "X-Rays of the Chest: Their Use in Tuberculosis Suspects," page 619.

Churchill, Edward D.; M.A.; M.D. Harvard Medical School 1920; Instructor in Surgery, Harvard Medical School; Associate in Surgery, Massachusetts General Hospital. His address is Massachusetts General Hospital, Boston. His subject is "The Re-expansion of the Lung in Empyema with Notes Regarding the Mechanical Effects of Carbon Dioxide Inhalation," page 623.

Rockwell, John A.; B.S.; M.D. Boston University School of Medicine 1899; Visiting Physician, Massachusetts Homoeopathic Hospital, with which he has been associated for twenty-four years in various activities. His address is 24 Garden Street, Cambridge, Mass. His subject is "Modern Medical Tendencies," page 625.

Tobey, James A.; M.S., LL.B. Massachusetts Institute of Technology 1915; member of the D.C. Bar; Senior Staff Member, Institute for Government Research, Washington, D. C.; Formerly Secretary of the National Health Council of New York; Lecturer on Public Health at Harvard, M.I.T. and Columbia. His subject is "Public Health and the Federal Government," page 629. His address is 26 Jackson Place, Washington, D. C.

Van Hook, Weller; M.D. University of Illinois College of Medicine 1885; Formerly Professor of Surgery at Northwestern University Medical School and member of the Staff. His subject is "A Persistently Patent Urachus," page 631. His address is 31 State St., Chicago, Ill.

Dodd, Katharine; A.B.; M.D. Johns Hopkins Medical School 1921; Member, New England Pediatric Society; Formerly Assistant Resident in Pediatrics, New Haven Hospital. Her subject is "An Isolated Case of Erythema Arthriticum Epidemicum," page 633. Her address is 29 Pearl St., Worcester, Mass.

◆

The Massachusetts Medical Society

THE TREASURER'S REPORT

The Treasurer of the Massachusetts Medical Society makes the following report regarding the dividend distribution made April 1.

The Council of the Society voted to distribute the sum of $4000 to the district societies this year. The total number of payments received in time to count for the dividend computation was 3234, making the dividend per each paid member $1.236858.

The following table gives the number of payments in each district and the dividend.

DIVIDEND FIGURING, MARCH, 1926
Total Reported, 3234
Total, $4000—Per Member, $1.236858

District	Number reported paid	Check
Barnstable	29	$35.87
Berkshire	86	106.37
Bristol North	52	64.32
Bristol South	172	212.74
Essex North	150	185.53
Essex South	156	192.95
Franklin	32	39.58
Hampden	212	262.21
Hampshire	60	74.21
Middlesex East	77	95.24
Middlesex North	101	124.92
Middlesex South	517	639.46
Norfolk	451	557.82
Norfolk South	67	82.87
Plymouth	78	96.48
Suffolk	614	759.43
Worcester	311	384.66
Worcester North	69	85.34
	3234	$4000.00

Last year the total number of payments counting for the dividend was 3072. Therefore there are 162 more members counting for the dividend this year than last. The total Massachusetts membership of the Society is 3823. Deducting the 122 retired members leaves 3701. This shows that 467 members residing in Massachusetts had not paid at the time this report was made up.

A circular letter has been sent to all of these delinquents notifying them that they will not receive the Journal until payment of 1926 dues has been reported and in response to this letter a number of belated payments are being daily received.

A. K. Stone, *Treasurer.*

PAPERS FOR THE ANNUAL MEETING

Fellows are requested to send the titles of papers they may wish to read at the Annual Meeting of the Massachusetts Medical Society, which will be held in the Kimball Hotel, Springfield, on June 8 and 9, 1926, to one of the officers of the appropriate Section. Do it now, before the official program is made up. The program, under the terms of the By-Laws, must be mailed to every Fellow a month before the meeting. The officers of the Sections are:

Section of Medicine: *Chairman,* W. H. Robey, Boston. *Secretary,* Maurice Fremont-Smith, Boston.

Section of Surgery: *Chairman,* J. M. Birnie, Springfield. *Secretary,* H. P. Stevens, Boston.

Section of Tuberculosis: *Chairman,* A. S.

MacKnight, Attleborough. *Secretary*, Randall Clifford, Boston.

SECTION OF PEDIATRICS: *Chairman*, R. M. Smith, Boston. *Secretary*, J. Herbert Young, Boston.

SECTION OF OBSTETRICS AND GYNECOLOGY: *Chairman*, C. E. Mongan, Somerville. *Secretary*, F. C. Irving, Boston.

SECTION OF RADIOLOGY AND PHYSIOTHERAPY: *Chairman*, L. B. Morrison, Boston. *Secretary*, F. B. Granger, Boston.

The street and number addresses will be found in the Directory of 1926.

WALTER L. BURRAGE, *Secretary*.

* * *

LEGISLATIVE NOTES

SENATE bill No. 336 provides that Chapter 46 of the General Laws shall be amended by striking out Section 10 and inserting in place thereof the following:

> "SECTION 10. A physician or officer furnishing a certificate of death as required by the preceding section or by section forty-five of chapter one hundred and fourteen, shall, if the deceased, to the best of his knowledge or belief, was a soldier, sailor or marine in any war in which the United States has been engaged, insert in the certificate a recital to that effect, specifying the war, and shall also specify in such certificate both the primary and the secondary or immediate cause of death as nearly as he can state the same. For neglect to comply with any provision of this section, such physician or officer shall forfeit ten dollars. For the purposes of this section and of sections forty-five, forty-six and forty-seven of said chapter one hundred and fourteen, the word 'war' shall include the China relief expedition, the Philippine insurrection after February fourteenth, eighteen hundred and ninety-eight, and prior to July fourth, nineteen hundred and two, and the Mexican border service of nineteen hundred and sixteen and nineteen hundred and seventeen."

The rest of the bill imposes duties on undertakers or others in charge of burial or cremation of the body referred to.

This bill places unwelcome responsibilities on the attending physician. While it is reasonable to require doctors to give all useful information relating to the cause of death, it is most unreasonable to make the attending doctor give the war record of any person. That is not and should not be made a part of the duties of a physician. The attending doctor may be fined for not complying with the requirements of this act.

The bill designed to extend the requirements for vaccination to pupils in private schools was taken up in the Senate Tuesday, March 30, 1926. Only nine senators voted in favor of this bill and nineteen against it. There was no discussion. Thus the legislature of this state took the illogical position of making an exception with respect to pupils in private schools as compared with those in public schools. Here we have evidence that the Senate of this state cannot be led to accept the advice of the great majority of physicians and public health authorities. The argument of some of the senators in conference with some physicians was that the number of letters received asking for opposition to the bill far exceeded those submitted by physicians and others. In other words, the bill was defeated not because it was not a good bill but because constituents did not favor it.

It is generally believed that a much larger number of physicians were this year actively engaged in the educational campaign to instruct the people of the state. With a leader in the Senate the result would have been different. A bill without active support has little standing in a legislative assembly and no one of the senators was willing to take this bill in charge and speak for it.

The medical profession is no worse off, for the benefits of vaccination can be secured by those who have the disposition to make use of the protection afforded by this treatment. We are sincerely sorry for those who may be afflicted with smallpox in the future.

The contest is not finished. Doctors will, another year, continue to work for all possible advantages which may be promoted by preventive medicine.

The committee on Public Health, to whom was referred the petition (accompanied by bill, House No. 790) of W. Henry Grant relative to the standard of dental colleges, report the accompanying bill (House, No. 1319).

For the committee,

HENRY A. ESTABROOK.

House bill No. 1319 relating to standardization of Dental colleges as amended, has been enacted to read as follows:

> "SECTION 46. A dental college shall be considered reputable which possesses the following qualifications:
>
> First, It shall be incorporated and authorized by its charter to confer degrees of doctor of dental medicine, doctor of dental surgery or doctor of dental science.
>
> Second, It shall have a competent faculty and corps of instructors. The teaching staff shall deliver a comprehensive and satisfactory course of lectures supplemented by adequate clinical and laboratory exercises in all subjects pertaining to modern dentistry.
>
> Third, It shall give a course of not less than four separate academic years to matriculants who are graduates of accredited high schools or who present proof of equivalent training, or a course of not less than three separate academic years to matriculants who present satisfactory proof of having successfully completed two years of appropriate pre-dental training in a college or university authorized to grant degrees. Each academic year shall consist of not less than thirty-two weeks of six days each.
>
> The administrative policy of the dental college shall be such as to accomplish the requirements of this section."

Senate Bill 321, relating to the construction of hospitals as amended, to read as follows:

SECTION 1. Every building in the city of Boston hereafter erected, altered or designed for use or occupation as a hospital shall be provided with not less than two fireproof enclosed stairways, and such additional like stairways as the building commissioner of said city, in this act called the commissioner, may determine, to be necessary. All of said stairways shall be so located with the approval of the commissioner as to furnish a ready and unobstructed means of egress from all parts of the building. All of said stairways and the stair landings shall have such clear width between hand rails and wall as the commissioner may require, but in no event less than forty-four inches, and the stair landings shall be free from steps and winders. At least one of the stairways shall communicate with the roof of the building, and all the stairways shall have such exits to grade as the commissioner may require. Such smokeproof doors shall be installed in the building as the commissioner may require.

SECTION 2. The board of appeal provided for by section six of chapter five hundred and fifty of the acts of nineteen hundred and seven and amendments thereof shall act as a board of appeal under this act and under sections one and two of chapter one hundred and sixty-three of the Special Acts of nineteen hundred and nineteen, and the members thereof shall receive therefor the same compensation as is provided in said section six. Any person aggrieved by a requirement of the commissioner under this act or under said sections one or two, or by a refusal of the commissioner to issue a permit on account thereof, may appeal within ninety days after being notified of such requirement or refusal to the board of appeal. The appellant shall pay to the commissioner a fee of ten dollars before his appeal shall be heard by the board, and all such fees shall be deposited by the commissioner with the city collector not later than one week after receipt. After notice given to such parties as the board shall order, a hearing shall be had and the board shall affirm, annul or modify the requirement or refusal of the commissioner and shall notify the commissioner and the appellant thereof. If the requirement or refusal is affirmed, it shall have full force and effect, but if annulled or modified, the commissioner shall revoke or amend the requirement appealed from or shall issue a permit, if a permit has been refused, in accordance with the decision of the board. Decisions of the board hereunder shall be in writing and shall require the assent of at least three members.

SECTION 3. So much of said chapter one hundred and sixty-three as is inconsistent herewith shall not apply to hospital buildings described in section one.

SECTION 4. This act shall take effect upon its passage.

MISCELLANY

DIPHTHERIA—ANOTHER DISAPPEARING DISEASE

FIGURES recently compiled in the office of the Connecticut State Department of Health indicate that a new low point in diphtheria incidence was reached last year with a case rate for the state of 111.9 per hundred thousand population. In fact there has been a consistent drop for the past five years till the case rate last year was less than half the rate five years ago.

The diphtheria death rate for 1925 was 8.4 per hundred thousand population as compared with a rate of 11.2 for the preceding year. The rate was 12.7 in 1923. Thus last year was marked by a fall of 25 per cent in diphtheria death rate which was more than double the 11.8 per cent decrease the year before. The downward trend of diphtheria rates is regarded by health officials as particularly gratifying in view of the fact that it follows closely greater attention to the immunization of children against diphtheria by diphtheria toxin-antitoxin.

NEW HAVEN LEADS THE WAY

The low case rate in New Haven represents a 95 per cent drop from the rate of 295.8 for 1921. City deaths rates often appear unduly high, being augmented by deaths of out-of-town patients brought to the city for hospitalization. In New Haven four of the seven deaths in 1924 and six of the nine deaths in 1925 were out-of-town patients, leaving only 3 resident deaths per year for the city. Using this number in the calculation would give a resident diphtheria death rate in New Haven of only 1.7 for the past two years.

NOTES FROM THE BOSTON MEDICAL LIBRARY

THE ancient history of China is mythological and legendary but authorities are agreed that China had a civilization contemporary with that of Egypt and Sumir. In remote times when writing was not yet known, knowledge was transmitted from generation to generation by oral tradition. The legends teach us that the knowledge contained therein could not be historically assigned to any other period and was handed down from a time lying beyond the beginning of Chinese history.

The second emperor of Chinese historians is Shön-Nung, 2737-2705 B. C. One of the most noteworthy achievements attributed to his reign was the discovery of the medicinal properties of plants.

Huang-Ti, 2704-2595 B. C. followed Shön-Nung as the third emperor of the "Five Rulers". Quite a number of the fundamental inventions of Chinese civilization are ascribed to him. It was during this period that the "Bird-print" writing was said to have originated. He is supposed to have made bricks and to have taught his workmen how to construct houses. He laid the foundations for the sacrificial cult and built the first temple for the offering of sacrifices which had previously been offered in the open air. To regulate the calendar he built an observatory and he laid down rules of conduct for his people. He was war-like, progressive and ruled with a rod of iron but was kind and considerate to the loyal among his subjects.

During the reign of Huang-Ti, legend states that there lived an eminent physician named Ma She Hwang who was very learned in the secrets of the pulse and could foretell whether one would die or recover. He is made the hero of a very pretty legend which is described in the Rassen-sen-den. It is said that once a dragon appeared before him and he perceived by its falling ears and drooping jaw that it was ill. Ma She Hwang made a puncture in the lip of the dragon and administered a potion of liquorice. The sickness was at once relieved and the dragon restored to health. The dragon was so grateful that it awarded the doctor the miraculous power of curing all diseases and then flew away to the clouds.

In commemoration of its 50th anniversary a very good friend of the Library has presented and exquisite large ivory carving depicting the physician performing the operation on the dragon. The carving is by Ichi Kawa Bimi, an eminent and well known modern Japanese artist noted for his carvings of muscular expression and the workmanship is marvelous in its detail.

J. F. B.

STATE ACTION ON THE SUBJECT OF QUACKERY AND MEDICAL PRACTICE

The N. Y. legislature has been petitioned for the appointment of a Commission to investigate the medical situation in that state. The report will be submitted to the 1927 legislature and will deal especially with the following propositions:

"Has public health been injured by the activity of self-styled medical institutions and 'diploma mills.'

"Have graduates of any such low-standing institutions been employed by the State Public Health Service or any other branch of the State Government.

"Has the standing of the State medical institutions and of our medical profession generally been injured in other States by the action of such self-styled medical institutions and 'diploma mills.'

"Have graduates of such institutions and diploma mills been offering themselves as practitioners of medicine in the State of New York.

"Have all the laws and requirements as to registration been observed by practitioners of medicine in the State of New York.

"Have any institutions giving degrees in medicine in the State of New York been issuing diplomas or degrees to persons without sufficient knowledge and training as to legitimately entitle them to such diplomas or degrees."

The commission is instructed "to ascertain from the United States Government officials if the mails have been used by such self-styled medical institutions and organizations known popularly as 'Diploma Mills,' for purposes of fraud in connection with the sale of degrees or diplomas in preparation for medical practice, and to inquire to the fullest detail extent as to the legitimate transactions of all institutions or schools issuing such diplomas or degrees."

An appropriation of $30,000 to defray the cost of the proposed inquiry is called for by the resolution which would give to the committee power to sit without, as well as within, the State.

PROTECT YOUR NEIGHBOR—STOP SPRAYING GERMS

The man on the avenue has a cold, an alarming one, judging from the hoarse sounds as he coughed. It was one of those mild colds which if taken in time will respond to treatment of rest in bed, or, if neglected, will develop into something more serious perhaps bronchitis or pneumonia.

The man evidently did not care what happened for he was not taking the rest-stay-at-home cure. Furthermore, he did not care how many people took that cold from him. For a mile or more he freely sprayed the air with germs coughed up in sputum from his throat.

It was a much-traveled avenue. Many others were passing or following in his wake and those who stopped and spoke with him had the opportunity to breathe in the infected, germ-laden spray from his mouth or nose as he spoke or sneezed.

Thus are colds and other diseases spread from one to another, from mouth spray of one who coughs or sneezes, and from fresh sputum from the careless spitter.

Now is the time to push that anti-spitting, anti-influenza campaign, and so eliminate from the community one source of contagion. The law stands back of any effort to get rid of careless spitters that endanger the health of others. Section 2672 of the Public Acts of 1919 defines spitting as "the act of expelling any secretion from the chest, throat, mouth or nose". It forbids spitting "on the paved walk of any public street, park or square" or floor, hall, or office of any hotel, restaurant, apartment house, tenement or lodging house which is used in common by guests or tenants thereof, or upon floor, platform, steps or stairs of any public building, church, theatre, railway station, store, factory or street car or other public conveyance."—*Bulletin Connecticut State Department of Health.*

CELEBRATED SPEAKERS SCHEDULED TO APPEAR AT THE BIENNIAL NURSING CONVENTION

From coast to coast the call has gone out for the biennial convention of the American Nurses'

Association, and from now until May 17, the eyes of all nurses in the United States will be turned toward Atlantic City.

Reservations are being made in all parts of the country, in Porto Rico, Hawaii and Canada, and delegations in many states have already completed their plans for the trip.

One of the best conventions in the history of the association!

This is the prophecy of all those who have seen the forecast of the program, and a unique opportunity will be offered the same week when the nurses with thirteen other health organizations participate in the first American Health Congress ever held in the United States.

Four great sessions of the Congress are planned and 7,000 people from every branch of health effort in the country will attend. More than 5,000 of the number present will be nurses, according to the prediction made, which shows the tremendous part played by the profession in health work, and the importance of nursing in any health program.

Among the men of international and national prominence who will make the Health Congress memorable are Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P., well known in public health work in England; Dr. C.-E. A. Winslow, president of the American Public Health Association, Dr. Ray Lyman Wilbur, president of Leland Stanford University, and Dr. George E. Vincent, president of the Rockefeller Foundation.—*Bulletin American Nurses Association.*

RECENT DEATHS

ANTHONY—Dr. Jeremiah Christopher Anthony, a practitioner of Springfield, formerly a Fellow of the Massachusetts Medical Society, died in that city, March 29, 1926, at the age of 60.

He was born in Springfield and was a resident all his life, graduating from the Springfield High School in 1883 and from Jefferson Medical College, Philadelphia, in 1891.

Returning to Springfield, he began practice. He was married in 1916 to Miss Anna Curtis, who survives him. He also leaves several nephews and nieces in Chicago. He was a member of both Springfield Lodge of Elks and Home City Council, Knights of Columbus, and was medical examiner for both organizations. He also belonged to Division 12, A. O. H.

AYER — Dr. Richard Gilbert Ayer, a prominent physician of Honolulu, formerly of Haverhill, Mass., died at Honolulu, March 30, 1926. He was a graduate of Harvard Medical School in the class of 1891. He practised first in Cambridge, then in Portchester, N. Y., and then in Durango County, Mexico. He went to Honolulu in 1912 and had been city physician there. He was 57 years old.

COPELAND—Fall River, March 30—Dr. Charles W. Copeland, a retired physician, died today after a long illness, age 74. The funeral, which will be private, will be at the home, 173 Purchase Street.

He was born in North Bridgewater, son of Charles D. and Esther Crary Copeland. He prepared for college at Exeter and entered Harvard. He left at the end of his freshman year to study in Germany. In 1877 he received a degree from the University of Giessen, and the following year came to this city and started practice. He practiced in Fall River for 18 years, retiring in 1896.

Besides his widow, Maude C. Copeland, he is survived by four sons, Fred H., Charles M., William J. and Richard W., all of Fall River; and four daughters, Mrs. Marion C. Froman of Berlin, Mrs. Louise C. Furbeck of Wyoming and Dorothy M. and Elizabeth E. Copeland of this city.—*Boston Herald.*

DONLAN—Dr. Charles Edwin Donlan of Malden, former superintendent of the Long Island Hospital, Boston harbor, died at Miami, Fla., March 30, 1926, aged 52.

He was appointed superintendent of the Long Island institution in April, 1908, serving until 1920.

Dr. Donlan was a native of Lowell and a graduate of Harvard Medical School in the class of 1898. He served as an army surgeon during the war with Spain. He was superintendent of the Lowell almshouse for five years, resigning in 1906, and had served on the staff of St. John's Hospital, Lowell. He was a charter member of Lowell Council, K. of C. He is survived by a sister, Miss Esther Donlan of Lowell, and a nephew, Charles B. Lee of Malden.

VOSE—Dr. Albert C. Vose, for nearly 40 years a well known physician of Mattapoisett and Marion, and well known to the summer visitors ot the Cape, died a few days ago at his home in Marion. Because of illness he had been unable to practice for the past twelve years. He would have been 73 had he lived until April 26. Dr. Vose was born in Clinton, N. Y. He was educated at Boston University and the Medical School of the University of Cincinnati. He practiced for several years in Mattapoisett and then moved to Marion, where he lived for 35 years. A brother of Dr. Vose was Dr. Edwin Vose, a prominent physician of Portland, Me., who died recently. Dr. Vose was a member of the Masonic order. He is survived by his wife, Mrs. Ada Vose.

OBITUARIES

JOHN MASON LITTLE, M.D.

Dr. John Mason Little died at his home in Brookline March 23, 1926, of heart disease after an illness of less than two weeks. He was born in Swampscott June 7, 1875, the son of the late John Mason and Helen (Beal) Little.

He was a graduate of the Noble & Greenough School, Boston, of Harvard College '97 and Harvard Medical School '01.

After serving an internship at the Massachusetts General Hospital he spent a year in travel and study in Europe. He returned to Boston in 1903 and began private practice, sharing an office with his classmate, Dr. Fred T. Murphy. During the following four years much of his time was spent in assisting the late Dr. Samuel J. Mixter.

In 1907 he joined the Grenfell Mission and for ten years was very active in its work in Newfoundland and Labrador. The short Summers were spent in cruising up and down the coast of that North country and in Winters many trips were made by dog-sled. He became the Head of a small hospital at St. Anthony, Newfoundland, the capacity of which was doubled while he was in charge. This change was made possible largely by gifts from his own family and personal friends.

In September 1911 at St. Anthony he married a co-worker, Miss Ruth Esther Keese of Ashburnham, Massachusetts. In 1917 for the sake of their three boys Dr. and Mrs. Little reluctantly returned to Massachusetts and made their home in Brookline. Three more children were born and all six with Mrs. Little survive.

After his return Dr. Little was appointed surgeon to out-patients at the Massachusetts General Hospital, Assistant Visiting Surgeon to the Long Island Hospital, Instructor in Surgical Technique at the Harvard Medical School and a Medical Examiner of the New England Mutual Life Insurance Company. Later he became one of the Assistant Medical Directors of that Company and Surgeon of the Boston & Albany Railroad. This necessitated his resigning his Hospital and Medical School positions.

He was a member of the Massachusetts Medical Society, American Medical Association, American College of Surgeons, also of the Harvard Club and the Union Club of Boston.

He was one of a large family. A brother and five sisters survive him. His boyhood and youth were spent in or near Boston. Fondness for life on the salt water was a family trait.

In a rather peculiar way Dr. Little's life was divided into periods each of which prepared him for the broader work of the next period. His courses in Preparatory School and College were such as to add to his already large circle of friends. After graduation from College in 1897 the next ten years were spent in Medical School, Hospital, graduate study in Vienna and private practice under the inspiring leadership of Dr. Mixter whose surgical practice took him to many parts of New England in the days when means of transportation were less rapid than at present and when well-equipped small hospitals were far less numerous than now. Frequent operations on patients in their homes tended to develop the resourcefulness of the surgeon. Next came ten years of the varied work Medical, Surgical, Administrative, of the well-known Grenfell Mission. This period presented professional and sociological problems numerous enough and complex enough to tax the ingenuity and test the courage of any man or woman who tried to meet and dispose of them. During the ten years of this difficult and absorbing work Dr. Little was eminently successful. He published several articles in Medical Journals, notable among which were a report of a series of operations for the relief of selected cases of epilepsy and a summary of his studies of beri-beri as seen in that country. During the last ten-year period of his life, after consideration of his family had brought him back to his native State, although meeting different problems he continued his keen interest in the welfare of the people "up North". He was at the time of his death President of the New England Grenfell Association and a Director of the International Grenfell Association. Membership in these bodies was not an honorary position merely but one which involved much hard work and called for faith, tact, courage, all of which were given cheerfully and freely.

It is not inappropriate in this connection to record the fact that it was Dr. Little's frequently-expressed wish that his body should be cremated and the ashes taken to St. Anthony for burial. This wish will be carried out and it is planned to have in time a suitable memorial erected there in connection with the hospital and other work for those whose interests were so close to his heart.

A many-sided man who made friends easily, who knew how to play but who seemed to prefer hard work, who gave generously of time and counsel to his friends, a man of broad vision and sympathy, yet well-poised and with a lively sense of humor, such was the friend we have known, and whom we shall hold in grateful and affectionate remembrance.

D. N. B.

GEORGE A. STICKNEY, M.D.

Dr. George A. Stickney died at his home in Beverly on March 22, 1926.

He was born in Beverly, October 5, 1856 and had spent the greater part of his life in that city. His medical education was obtained in study with Dr. Swasey and later at the Harvard Medical School, from which he graduated in 1882. He was a member of the American Medical Association and a Fellow of the Massachusetts Medical Society. For over 40 years Dr. Stickney had been a member of the Pension Board and for 35 years he had served either as an associate or medical examiner of the sixth Essex district. In 1893 he became a member of the Medical Staff of the Beverly Hospital and continued to serve in that capacity until 1908 when he became a member of the Consulting Staff. For the past 12 years he had been the head of the hospital staff of the United Shoe Machinery Corporation at Beverly, and, in addition, although nearly 70 years of age, he carried on a very extensive general practice.

Dr. Stickney was an excellent representative of the fast diminishing number of family physicians. He gave freely of his time to all and was always genial and sympathetic. His patients were his friends, to all of whom his death comes as a great shock.

He is survived by his widow, one daughter, and two sons, one of whom, Dr. Robert C. Stickney, was associated with him in practice.

FRANCIS JOEL CANEDY, M.D.

Dr. Francis J. Canedy, a long time practitioner of Shelburne Falls, Medical Examiner of Western Franklin County for many years, died at his home, March 30, 1926, at the age of 79. A native of Heath, and son of Joel and Louisa Canedy, he was a student and a teacher at the old Shelburne Falls Academy, and a graduate of the Medical School of the University of Michigan in 1870, he had an abiding interest in science and education. As a general practitioner his success was remarkable, in spite of the exacting nature of a practice which, at times, included as many as three thousand persons. He was president of the Shelburne Falls Savings Bank, president of the Masseamit Mills, president of the Massachusetts Medico-Legal Society, a councilor from 1891-1900 of the Massachusetts Medical Society from the Franklin District and vice-president of the parent society in 1907-1908.

He is survived by his widow, Mrs. Gertrude Griebel Canedy of Shelburne Falls, a sister, Mrs. Lucy Stockwell of Heath, two daughters, Mrs. Frederic A. Tupper of Brighton and Mrs. Philip B. Hadley of Shelburne Falls.

◆

CORRESPONDENCE

AN OPENING FOR A DOCTOR

1 April, 1926.

Mr. Editor:

This morning's mail brings me the following:

"Our town voted this spring to give a good doctor one thousand dollars to come and stay a year and practice. There is a nice house, all furnished, that a doctor can buy cheap, on the State road, and near the stores, church and school. Our doctor is dead and also the doctor in our next town, and there is a good chance for a doctor, as the nearest one is eight miles away and he does not want to come so far."

I might add that he begins "doctor" with a capital "D" in every case, which is a good sign of the respect that still exists in this New Hampshire town.

Can you suggest anyone for them?

I shall be glad to put you in touch with the writer if you can help him.

Cordially yours,
Eleanor Mellen.

291 Lake Avenue, Newton Highlands.

A REFERENCE TO A FORMER ACTION OF THE COUNCIL BY DR. RICHARD C. CABOT

Mr. Editor:

In a recent number of the *Survey*, Dr. Richard C. Cabot speaks of the "change that has come about in the medical profession since the Committee on Ethics and Discipline publicly condemned" him "for advocating the same sort of experiments in public medical service that the Life Extension Institute Board are now backing," saying, "Then I was an abominable heretic, now I have become almost orthodox."

Since the verdict of that Committee has been brought to the attention of the public in a lay journal after all these years, it is proper to state that Dr. Cabot was "condemned" for public reflections on the ethical standards of the medical profession and on the honor and intelligence of his fellow practitioners, for the manner in which he presented his views rather than for the meat that was in them, and that I for one am quite sure that the same committee, or any committee, under similar circumstances would act in 1926 as it did in 1916.

I have of course no authority to speak for Drs. J. A. Gage, Henry Jackson, G. deN. Hough and John W. Bartol, who were, with myself, members of that Committee on Ethics, but knowing these men as I do, have no reason to think that their opinions have changed about the unfortunate publicity which the Evans Memorial lectures of that day received.

The Committee considered the matter for over a year, conferred with the then President and with three Ex-Presidents of the Society before preparing their report, a report unanimously made, and received by the Council with equally unanimous approval.

Sincerely,
Samuel B. Woodward.

◆

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Communicable Diseases Reported for the Week Ending March 27, 1926

Anterior poliomyelitis	1
Anthrax	2
Chickenpox	153
Diphtheria	70
Dog-bite	5
Dysentery	1
Encephalitis lethargica	3
Epidemic cerebrospinal meningitis	8
German measles	261
Gonorrhea	48
Influenza	590
Lobar pneumonia	250
Measles	930
Mumps	114
Ophthalmia neonatorum	16
Scarlet fever	260
Septic sore throat	2
Suppurative conjunctivitis	13
Syphilis	39
Trachoma	1
Pulmonary tuberculosis	123
Tuberculosis, other forms	43
Typhoid fever	6
Whooping cough	419

RHODE ISLAND STATE BOARD OF HEALTH

Contagious Diseases Reported for the Week Ending March 20, 1926

Diphtheria	9
Measles	256
Whooping cough	16
Mumps	8
Scarlet fever	7
Influenza	185
Pneumonia	10
Chickenpox	2
Septic sore throat	1
German measles	25
Tuberculosis	3

CONNECTICUT DEPARTMENT OF HEALTH

Morbidity Report for the Week Ending March 20, 1926

Measles	1171
Last week	1284
Diphtheria	33
Last week	48
Diphtheria bacilli carriers	18
Typhoid fever	1
Last week	0
Scarlet fever	82
Last week	82
Whooping cough	113
Last week	117
Bronchopneumonia	97
Cerebrospinal meningitis	1
Chickenpox	56
Encephalitis epidemic	1
German measles	9
Influenza	171
Mumps	7
Pneumonia, lobar	120
Septic sore throat	2
Tuberculosis, pulmonary	23
Tuberculosis, other forms	5
Gonorrhea	8
Syphilis	20

MORBIDITY REPORT FOR THE WEEK ENDING MARCH 27, 1926

Measles	811	Chickenpox	54
Last week	1171	Conjunctivitis inf.	1
Diphtheria	25	German measles	7
Last week	35	Influenza	531
Diphtheria bacilli carriers	11	Mumps	18
Typhoid fever	1	Paratyphoid fever	1
Last week	1	Pneumonia, lobar	110
Scarlet fever	95	Septic sore throat	1
Last week	82	Tuberculosis, pulmonary	27
Whooping cough	147	Tuberculosis, other forms	2
Last week	113	Gonorrhea	9
Bronchopneumonia	113	Syphilis	25
Cerebrospinal meningitis	2		

NEWS ITEMS

REMOVAL — Dr. Tom A. Williams, formerly of Washington, D. C., has moved his office to 208 Exchange Building, Miami, Fla.

DR. WALTER P. BOWERS gave an address on Medical Ethics to the senior class at Tufts Medical School, Thursday afternoon, March 25.

REGISTRATION RESTORED—The registration of Daniel W. Dorman was restored at a meeting of the Board March 11, 1926.

MEASLES TOXIN—The daily papers report that Dr. N. S. Ferry, working in a commercial laboratory, has "discovered" a measles toxin, which will not be available for general use for some time. The organism which it is claimed has been isolated has been given the name of "Streptococcus Morbilli." Dr. Ferry is a graduate of Johns Hopkins Medical School.

REPORTS AND NOTICES OF MEETINGS

MEMORIAL MEETING TO DOCTOR EUGENE ROBERT KELLEY

THERE will be a meeting at Ware Hall, Boston Medical Library, 8 The Fenway, Boston, at five o'clock, April thirteenth, in memory of Dr. Eugene Robert Kelley. Mr. Edward S. Anthoine, a classmate at Bowdoin College, and Dr. Allan J. McLaughlin, previously Commissioner of Health of Massachusetts, will speak.

All those who knew Dr. Kelley and his work are invited to attend and do honor to his memory.

TRUDEAU SOCIETY

THE next meeting of The Trudeau Society of Boston will be held on May 11, 1926, at 8:15 p. m., in Sprague Hall, The Medical Library, 8 The Fenway, Boston, Mass.

The paper will be by Dr. Edward O. Otis. Subject—Symptomatic Treatment of Tuberculosis.

An active discussion is promised.

Physicians, Medical Students and Nurses are cordially invited.

GEORGE S. HILL, *Secretary*

THE NEW ENGLAND DERMATOLOGICAL SOCIETY

THE annual meeting of the Society will be held on Wednesday, April 14, at three o'clock, in the Skin Out-Patient Department of the Boston City Hospital.

WESLEY T. LEE, M.D., *Secretary.*

HARVARD MEDICAL SOCIETY

THE next regular meeting of the Harvard Medical Society will be held as usual in the amphitheatre of the Peter Bent Brigham Hospital, April 13, 1926, at 8:15 p. m. The program follows:—

1. Demonstration of Cases.
2. Velocity of Blood-Flow in Health and Disease—Herman Blumgart, Soma Weiss and Otto Yens.

All members of the Medical Profession, Medical Students and Nurses are invited.

S. A. LEVINE, *Secretary*

SUFFOLK DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

THE censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, May 6, 1926, at 4:00 o'clock.

Candidates should make personal application to the secretary and present their medical diploma at least one week before the examination.

ARTHUR H. CROSBIE, *Secretary.*
520 Commonwealth Avenue, Boston.

ALL PHYSICIANS INVITED TO ATTEND THE OPENING OF LAKEVILLE STATE SANATORIUM FOR CASES OF NON-PULMONARY TUBERCULOSIS.

THE State Department of Public Health announces that on Tuesday, April 27th, there will be a formal opening of the Lakeville State Sanatorium as an institution given over exclusively to the care of non-pulmonary tuberculosis. It is expected that His Excellency Governor Alvan T. Fuller will be present. Other speakers will be Dr. Linsly R. Williams of the National Tuberculosis Association on "National Aspects of the Tuberculosis Program"; Dr. Vincent Y. Bowditch on "Landmarks in the State's Care of the Tuberculous"; Dr. James S. Stone, President, Massachusetts Medical Society on "Non-Pulmonary Tuberculosis and the Profession"; Dr. Kendall Emerson, President, Massachusetts Tuberculosis League. on "Non-Pulmonary Tuberculosis and the Public"; Dr. Leon A. Alley, Superintendent, Lakeville State Sanatorium, on the services offered at Lakeville. A buffet lunch will be served from one to two o'clock, and the formal exercises will begin at three.

All physicians are cordially invited to attend these exercises which mark a significant advance in the service offered by the State to the tuberculous patient. It is requested that those planning to come inform the Department of Public Health, State House, Boston, indicating their method of transportation in order that adequate facilities may be available.

A train will leave Boston at 1.30 P. M., arriving at Middleborough at 2.31 P. M. Returning, a train will leave Middleborough at 4.45 P. M., arriving at Boston at 6.06 P. M., and another will leave Middleborough at 5.48 P. M., arriving at Boston at 6.50 P. M.

Special bus service will leave Copley Square in front of the Copley Plaza Hotel at 11 A. M. and return from Middleborough so as to arrive in Boston about 6.30 P. M.

The institution is reached from Boston by road through Mattapan, Blue Hill Avenue to Ponkapoag, to Stoughton, then the Taunton Road to West Bridgewater, and to Middleborough, the institution being located about one mile out of Middleborough on the New Bedford road.

NEW ENGLAND PEDIATRIC SOCIETY

The ninety-seventh meeting of the New England Pediatric Society will be held at the Boston Medical Library on Friday, April 9, 1926, at 8:15 p. m.

The following papers will be read:

1. The Feeding of the Newborn Infant from the Obstetrician's View Point, Frederick C. Irving, M.D., Boston.
2. Establishment and Re-establishment of Mother's Milk, Warren R. Sisson, M.D., Boston.
3. The Feeding of the Normal Infant at Birth, Maynard Ladd, M.D., Boston.

Light refreshments will be served after the meeting.

John Lovett Morse, M.D., *President.*
Joseph Garland, M.D., *Secretary.*

CHILDREN'S HOSPITAL STAFF CLINIC

The Visiting Staff of the Children's Hospital will hold a clinical meeting in the amphitheatre of the hospital, Friday, April 9 at 4:30 p. m. All physicians are cordially invited to attend.

12TH ANNUAL MEETING OF MEDICAL WOMEN'S NATIONAL ASSN.

The Twelfth Annual Meeting the Medical Women's National Association will take place April 18-19, at Dallas, Texas, in conjunction with the American Medical Association meeting.

The headquarters of the M. W. N. A. are the Hotel Baker. Dr. May Agness Hopkins, Medical Arts Bldg., Dallas, Texas, is the Chairman of the Committee on Arrangements.

Women intending to go to this meeting should promptly make reservations either through Dr. Hopkins or directly at the Baker Hotel, as there will be a big crowd there. Hotel rates are reasonable, a double room with bath averaging $6.

The terms for railroad transportation should be looked up in the *A. M. A. Journal,* but in many places where there are large numbers of members of the Medical Women's National Association, special cars for the women may be run.

Medical Women passing through New Orleans are especially invited to stop over there and will meet with a cordial welcome from the New Orleans medical women, represented by Dr. Elizabeth Bass, 3513 Prytania St., who is President of the Women Physicians of the Southern Medical Association.

The Texas women, coöperating with the chairman, Dr. Hopkins, are making most attractive arrangements for the meeting. All medical women, whether members of the M. W. N. A. or not, are most cordially invited to participate in this meeting.

BOSTON HEALTH LEAGUE INC.

The next meeting will be held April 14th, at the North End Health Unit, 41 North Margin Street, at 3.30 P. M. Dr. Murray P. Horwood, Assistant Professor of Public Health, Massachusetts Institute of Technology, will speak on "A Program for a More Effective Campaign Against Tuberculosis in Boston."

BOSTON CITY HOSPITAL

STAFF CLINICAL MEETING

Cheever Surgical Amphitheatre, Thursday, April 15, 1926, at 4 P. M.

Demonstration of cases by members of the Medical and Surgical Staff. Discussion of the cases invited.

Physicians, Medical Students and Nurses Invited.

John J. Dowling, *Superintendent.*

SEMI-ANNUAL MEETING OF THE NEW HAMPSHIRE SURGICAL CLUB

The 28th semi-annual meeting of the New Hampshire Surgical Club will be held at Nashua, N. H., Tuesday, April the 27th, 1926. The customary operative clinic as arranged by the Nashua Doctors will take place at St. Joseph's Hospital beginning at 10 A. M. Lunch will be served at the hospital. The afternoon program consisting of a discussion of the morning clinic and prepared papers will be given at the new Nurses Home of the Memorial Hospital. Every effort is being made to insure an interesting and profitable meeting. The New Hampshire Surgical Club has a regular membership of over 200 as well as honorary members. Honorary members are made up of those out of the state who have appeared from time to time on the Club program. Honorary members are always especially welcome at all of the meetings.

JOHN F. HOLMES, M.D., *Secy.*

HEADQUARTERS FIRST CORPS AREA

OFFICE OF THE CORPS AREA SURGEON
BOSTON, MASS

THE next meeting in the Winter Training schedule for Reserve Medical Department officers will be held at the Medical Library, 48 Fenway, Boston, Mass., on April 14, 1926, at 8:00 p. m.

You are urged to attend and bring a Reserve officer or some Doctor who might become one with you.

HENRY S. BECKFORD,
Major, M. C. (Dol).

N. E. HOSPITAL FOR WOMEN AND CHILDREN

THE April Clinical conference of the New England Hospital for women and children was held Thursday, April 1, 1926 at 7:45 P. M. Cases of uremia, laryngeal diphtheria, uterus duplex bicornis were presented.

MEETING OF THE HARVARD MEDICAL SOCIETY

THE Harvard Medical Society met at the Peter Bent Brigham Hospital on Tuesday, March 23rd.

Two cases were presented. The first case was a young man of twenty-eight complaining for the last few months of dimness of vision and periods of temporary amblyopia. Four years ago he began to wear glasses because his eyes grew tired easily. He has noticed that the hearing in his left ear has been impaired since 1918. Recently he has been troubled with pain in the sub occipital region. Physical examination shows a tilt of the head to the right side, deafness in the left ear, unsteadiness of gait, a positive Romberg's sign, hypotonicity of the muscles, nystagmus and a high degree of choked disc. The X-ray of the skull showed scalloping, characteristic of increased intracranial pressure. The diagnosis was a right acoustic nerve tumor.

The second case was a woman, aged forty-two, whose chief complaint was an inability to swallow. Her illness began eight weeks before with indefinite headache in the right parietal region. The day before entry, five weeks ago, she felt dizzy and unable to swallow. On entry she was in a semi-stuporous state with temperature 101°F, pulse 90 and respiration slow and regular. Physical examination revealed an inability to swallow, rotary nystagmus, diplopia, loss of corneal reflex in the right eye, paralysis of the palate on the right side, loss of power in the right arm and some ataxia. There was a positive Babinski and positive Oppenheim's sign on the right. There was slight diminution of sensation on the right side and numbness of the right side of the face. The lumbar puncture was negative but suggested a type one gold sol curve. The eye grounds were negative. The diagnosis that seemed most probable was a cerebral lesion of luetic origin. The paralysis improved rapidly. The day following entry she was able to swallow. For four weeks she has been treated with protiodide of mercury and potassium iodide. Improvement has been steady.

Dr. Richard P. Strong, Professor of Tropical Medicine, addressed the meeting on "The Human Spirochetal Infections". He divided these infections into two groups:

(1) Those that give rise primarily to infections of the blood. These include Relapsing fever, African Tick fever, Rat-bite fever, Hemorrhagic jaundice and Yellow fever.

(2) Those causing primarily local lesions including Syphilis, Yaws and Tropical Ulcer.

Spirochetes have been described in such diseases as lymphatic leukemia, lympho-sarcoma, trench fever, trench nephritis, scarlatina, arthritis, acute yellow atrophy of the liver, erythema nodosum, psoriasis and encephalitis lethargica, but these have been shown to be soprophytic species, accidental invaders or erroneous observations. The spirochetes found in seven day fever and in black water fever are probably closely related to the lepto spira of hemorrhagic jaundice. Spirochetes of the intestinal tract have been thought by some to be a factor in certain forms of dysentery. Those found in the mouths of normal individuals, sometimes may complicate lesions and mask the true etiological factor (s. bronchialis).

The July Annals of the Pasteur Institute describe a spirochete isolated by Kermogant of that institution, from cases of mumps. It can be grown only in association with a motile grain negative bacillus. He claims to have successfully reproduced parotitis in animals by inoculations with this organism.

Dr. Strong described the various types of ticks that transmit the organism of relapsing fever in different countries.

Inoculation with the organism of relapsing fever has been successfully used in the treatment of general paresis. In a series of eighteen cases, eleven were symptomatically cured, two were slightly improved, two not at all improved and two died. The treatment is more or less empyrical. The super imposed infection may give rise to a state unfavorable to the spirocheta pallida, or it may produce a toxin that kills the spirochete of syphilis, or stimulate the production of immune bodies. At least one third of the cases are greatly improved or cured. Inoculation with the organism of relapsing fever has certain advantages over the treatment with the malarial parasite in that it produces a milder reaction which is self-limited, also in that the organism may be propagated by animal inoculation. There are only four to six attacks of fever and usually no unfavorable symptoms following human inoculation.

The transmission of yellow fever by an intermediate host, Stegomyia Fasciata, was demonstrated by the heroic investigations of Carroll, Lazear and others in 1900; but it was not until 1918 that Noguchi showed the lepto spira icteroides to be the cause of this disease. The morphology of this organism is very similar to that of lepto spira ictero hemorrhaegiae, the organism of hemorrhagic jaundice. They produce similar lesions in guinea pigs and are very closely related serologically. The difference in the two diseases is not entirely explained. There may be an additional element in yellow fever acting with the lepto spira icteroides just as in hog cholera there is a filtrable virus in addition to the bacillus.

Spirochetes which cause local lesions and are essentially tissue parasites rather than blood parasites include spirocheta pallida of Syphilis, spirochete pertenues of Yaws, spirocheta Schaudinni of Tropical ulcer, Spironema Noguchii of Dermal granulomatous spirochetosis. Noguchi has found also spirocheta callegyrum of condylomata and spirocheta phagedinis in phagedenic ulcerations. The last one may be soprophytic.

The tropical sloughing phagedena begins as a small populo-vesicular lesion. It later becomes eroded and ulcerated. The ulcer is sharply circumscribed but shows no tendency to heal unless treated. The organism can be inoculated into monkeys and rabbits, but only after the tissues and skin have been bruised and the circulation interfered with.

Another spirochetal organism causing a characteristic local lesion is Spironema Noguchii (w. sp.). The lesions are composed of small papillomata closely packed. These later ulcerate with the formation of scar tissue at the base. The popillomata are tender, very vascular and friable and bleed easily. Spirochetes may be obtained in great numbers from the lesions. They occur quite characteristically in star-shaped masses and are quite different from the spirochete of syphilis. The coils are coarser and thicker and there is a deeply staining nodule at each end of the organism. They may be cultivated in rabbits' serum. Inoculations in monkeys have been unsuccessful. Animals are not very susceptible, but a few of the organisms have been recovered from scrotal lesions produced in rabbits.

In the treatment of spirochetal infections the best results have been obtained with the arsenicals. Salvarsan is a specific for relapsing fever and very effective in Yaws. Yellow fever and hemorrhagic jaundice are not benefited by arsenicals. In these diseases arsenicals would be contraindicated on account of the marked involvement of the liver.

Dr. A. W. Sellards addressed the meeting on "Observations on Yaws in the Philippines." Contrasting Yaws with Syphilis, he said it is a much easier disease to control than syphilis. Clinically and pathologically it is distinct from syphilis. It bears a relation to syphilis similar to that of leprosy to tuberculosis. The first and secondary lesions of Yaws are identical. On healing, after treatment with neosalvarsan, they leave no scars, but do leave deeply pigmented areas that may persist for several months.

In some instances Yaws patients after treatment with neosalvarsan, possess definite resistance to re-infection for at least two or three years. Theoretically this resistance may be due either to an active immunity or to the persistence of a latent infection. However, an active infection with yaws does not, as in syphilis, prevent super infection with the development of typical granulomata.

The skin manifestations of Yaws are almost as varied as those of syphilis. The lesions in the palms resemble the palmar syphilides.

Yaws is one of the few diseases that are sharply limited to the Tropics. It occurs in typical form only in warm moist climates. It is often said to disappear as one goes from the sea-level up into the mountains. In the Philippines cases occur in the mountains which are atypical clinically. They show condylomatous lesions around the muco-cutaneous junctures.

Some of the manifestations of Yaws can be reproduced in the monkey.

Dr. M. Theiler addressed the meeting on "The Diagnosis of Rat-bite Fever and Observations on Spirocheta Morsus Muris." This organism has been recently inoculated into a number of cases of general paresis as a therapeutic measure. It has certain advantages over malaria in that it does not produce as severe a reaction. It may be kept by passage in guinea pigs and is readily controlled by arsphenamine injections. Some cases are immune to malaria but are not to rat-bite fever.

The incubation period in this disease is approximately fourteen days. The local reaction at the site of inoculation is followed by a regional lymphangitis and later by paroxysms of fever lasting one to three days. These are repeated up to fourteen paroxysms and the disease is then stopped by a single dose of arsphenamine.

The diagnosis of rat-bite fever is made early from the primary lesion. Later animals are inoculated with material obtained by gland puncture or with blood.

Guinea pigs may develop atypical reactions that make the diagnosis difficult. The best method of diagnosis is by the use of the serum. Antibodies develop early in the disease. If active spirochetes are mixed with the serum from an infected patient, they die in a few minutes. Normal serum has no such action. Typically the disease in the guinea pig resembles the disease in man.

In discussing yaws, Dr. Moss expressed a more conservative view of the results of arsphenamine treatment in this disease. Of something over 1000 cases treated in 1920 by the Harvard Commission, there were about twenty-five percent that were apparently cured at the time the commission left the island (Santo Domingo).

It is quite possible that this percentage might have been increased if an examination could have been made a few months later. During the summer of 1925 about half of the original 1000 cases were reexamined, and it was found that some of the 25% of cases which were reported as apparently cured in 1920 had had recurrences. The average period of freedom of signs and symptoms of the disease in these cases was about 3½ years.

SOCIETY MEETINGS

District Medical Societies

Essex South District Medical Society

Thursday, May 6—Censors meet at Salem Hospital, 3:30 P. M

Tuesday, May 11—The Tavern, Gloucester. Annual meeting Speaker to be announced.

Essex North District Medical Society

May 12, 1926—The annual meeting at the Anna Jaques Hospital, Newburyport.

Middlesex East District Society

April 14—At the Harvard Club at 6:30 P. M. Address by Dr. William E. Ladd: subject, "Kidney Affections in Childhood."

May—Annual meeting, Colonial Inn, North Reading. Subject and speaker to be announced.

Suffolk District Medical Society

April 28—At 8:15 P. M. Annual meeting. Election of officers. "Some Diagnostic, Prognostic and Therapeutic Aspects of Disorders of the Blood," Drs. George R. Minot, Cyrus C. Sturgis and Raphael Isaacs.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

BOOK REVIEWS

A Manual of Clinical Laboratory Methods. By CLYDE LOTTRIDGE CUMMER, Ph.B., M.D. Second Edition. Lea and Febiger. Philadelphia and New York. pp. 547.

The present multiplicity of clinical laboratory tests is such that the books attempting to detail them all are far too bulky for ordinary use. Dr. Cummer has wisely avoided this evil and has selected the most essential and commonly used tests, but in so doing has not omitted recent advances in laboratory science. A valuable feature is the concise yet explicit manner in which the various procedures are presented. In addition, a discussion of the clinical significance of the results of the various tests adds to the usefulness of this volume. Too often the laboratory methods are presented as though the results obtained by their use were an end in themselves.

The typographical appearance of the book is attractive and the illustrations are well selected to supplement the text.

The Wassermann reaction is covered with particular thoroughness, the preparation of the reagents being given in detail, and both the Kolmer Standard and the Cleveland methods are presented. The precipitation tests for syphilis are accorded but scant treatment, however, less than two pages being allotted to them. With the growing use of the Kahn test, there might well have been placed more emphasis on this class of reaction.

A feature present in this volume, but too often omitted in laboratory manuals, is an extensive and well chosen bibliography.

All in all, Dr. Cummer's manual would be a valuable addition to the shelves of any clinical laboratory.

The Diseases of Children. By the late Sir JAMES FREDERIC GOODHART, Bart., M.D., LL.D. Aberd., F.R.C.P. Twelfth Edition, edited by GEORGE FREDERIC STILL, M.A., M.D., F.R.C.P., Professor of Diseases of Children King's College, London; Physician for Diseases of Children, King's College Hospital; Physician to the Hospital for Sick Children, Great Ormond Street. With 68 Illustrations. Philadelphia, Lea & Febiger, 600 South Washington Square, 1926.

The first edition of this text book was published in 1885, and since that time eleven others have appeared. As explained in the preface it is a clinical work, and most of the clinical descriptions of disease are excellent. There is, however, surprisingly little text on such important subjects as celiac disease and the ductless glands, and much of the more recent knowledge of many conditions is lacking. The work has in general been brought up to date, but still it is not modern. In reading much of the text one is impressed with the fact that it is old fashioned. Boiling of milk is mentioned with disapproval, the addition of green vegetables to the diet is not stressed, and lancing of the gums as an aid to dentition is recommended. Therapeutics, even to the point of leeching is emphasized, and much medication is advised. As suggested before, it is in pure clinical description of disease that much of the value of the book lies. Viewed from a modern standpoint it seems to lack clear analytical conception of pathology and physiology.

Practical Helps in the Study and Treatment of Head Injuries. By ADOLPH M. HANSON. Boston: RICHARD G. BADGER. 109 pages. Price $3.

"Practical Helps in the study and treatment of Head Injuries" by Adolph M. Hanson is another one of "the short cut to knowledge" type of book. There is the typical prefatory assurance that the book is intended to serve only as a "stimulus" as well as the typical publisher's announcement that it is nevertheless "a thoroughly practical handbook for the busy physician".

The contained matter is divided along anatomical lines which repeat the usual simplified text book descriptions of the skull, the brain and the cranial nerves. Even this portion, however, is not altogether without interest since we find here such unusual statements as "that it is in basal fracture that the general practitioner is most often called upon for treatment" and that thrombosis of the cavernous sinus produces a pulsating exopthalmos. Little is said, and that little of a minimum of practical value, in regard to the physiology of the cerebro-spinal fluid. This is an omission which the reviewer finds it hard to excuse in view of the mass of work done along that line in the past seven years.

The effect of injury on the major anatomical subdivisions of the head is then considered. Here we find one thoroughly good chapter on "Injuries to the Scalp". The succeeding chapters, however, having to do with fractures of the skull, injuries to the brain, and gun-shot injuries of the head, certainly contain little of practical value to "the busy physician", although the stimulative effect is admittedly great especially if one should happen to want to treat a severe head injury.

Such obsolete directions as irrigation of the nose in possible basal fractures, the use of a solid silver plate to prevent bulging of a frontal decompression, the recommendation that a bone flap operation be performed for its decompressive effect, the entirely inadequate directions for the treatment of the surgical shock and an apparent failure to appreciate the relative importance of the cerebral and bony injuries and the influence of that fact upon treatment and prognosis in any given case makes one think with some alarm of the effect such "practical helps" would have on an otherwise helpless patient.

A final chapter—(except for a short appendix having to do with a method of recording findings)—takes up the "costo-chondral graft" and its use in filling skull defects. In view of the fact that it is generally admitted that it requires the best combined neurological and surgical judgment to determine the indications for the use of any graft in the skull, and that after having decided to use a graft success can only be obtained through the most painstaking skilled technique, this chapter loses its stimulative properties and becomes irritative and thus successfully administers the final shove which definitely puts this book on the "Quiz compend" shelf.

The Surgical Clinics of North America. Philadelphia Number—December, 1925. W. B. Saunders Co., Phila. Volume V, Number VI, contains 223 pages with complete index and 50 illustrations, and conforms in type to those volumes which have preceeded it.

The cases given by the clinic of Dr. John B. Deaver are those presented at the October meeting of the American College of Surgeons, and the subjects are as follows: Peritoneal Infection, Duodenal Ulcer, Fecal Fistula, Tuberculous Peritonitis, Bladder and Prostate cases, Exophthalmic Goitre, Carcinoma of the Stomach, Carcinoma of the Breast, Ascites, Carcinoma of Sigmoid, Splenectomy, Appendicitis, Pelvic Disease, Chronic Appendicitis, and Gall-Bladder Disease.

From the Neurological clinic of Dr. Charles H. Frazier: The Surgical Treatment of Trifacial Neuralgia, Surgery of Spinal Cord Tumors and Surgical Treatment of Pituitary Disorders.

Dr. Francis C. Grant: Treatment of Cranial Trauma.

Clinic of Dr. Geo. P. Muller: Preoperative Preparation on Surgical Patients, Purpura Hemorrhagica with Therapeutic Splenectomy, Postencephalitic Tic of the Diaphragm, Results of Peri-arterial Sympothectomy, Symposium on Lung Abscess, The Treatment of Superficial Burns, Blood Transfusion Methods, Symposium on Chronic Gall-Bladder Disease and Resumè of cases operated on during Clinic.

Dr. B. M. Anspach: Adherent Parovarian Cyst, Tubal Abortion, Pelvic Hematocele and Radium Treatment of Carcinoma of the Cervix.

Clinic of Dr. Leon Herman: Advanced Urogenital Tuberculosis, Diverticulum with Stone, Recurrent Diverticulum of Bladder, Carcinoma of the Prostate Gland Versus Interstitial Prostatitis, and Suppurative Epididymitis following Prostatic Abscess.

Clinic of Dr. H. L. Northrop: Epithelioma Destruction with Electrothermic Coagulation, Keloid of Forehead, Cavernous Angioma of Lower Extremity, Femoral Hernia—Operation by Inguinal Route, Cholecystectomy and Gastrostomy.

These articles are unusually well presented and the discussion is adequate, and there are some very valuable illustrations.